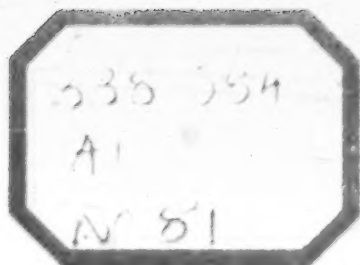




GOVERNMENT OF NEPAL

DRAFT FIVE YEAR PLAN

A SYNOPSIS



KATHMANDU

1956

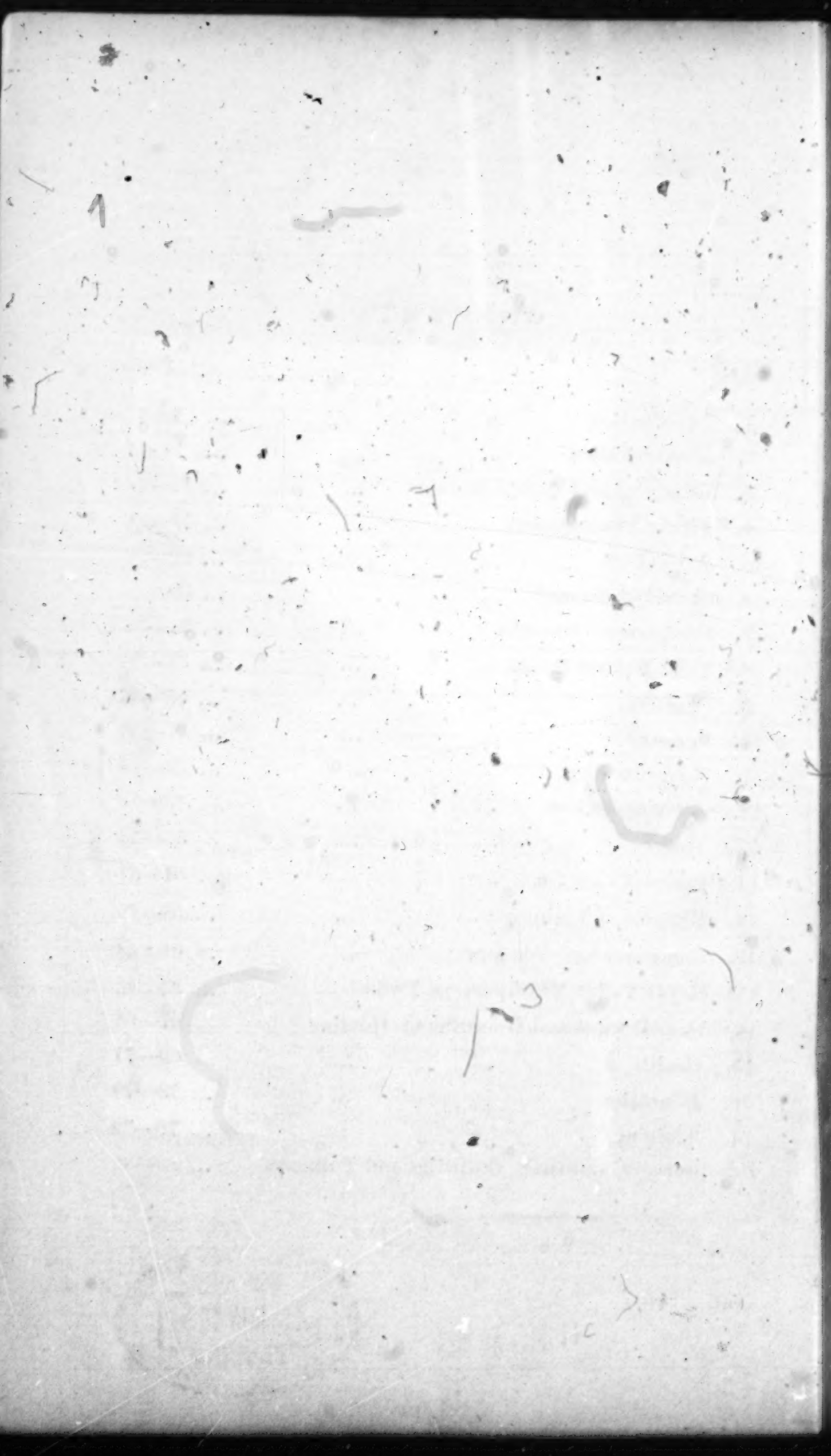
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CHAPTER 1

INTRODUCTION

It is no small task to mobilize the human and material resources of a nation for the achievement of a programme of reconstruction and development. To be successful, such an effort must be rooted in the real wants and aspirations of the people and must enlist their full and active support. There needs also to be widespread agreement that the objectives in view are right for the country; that, in addition to being desirable, they are also sensible, just, and attainable and, therefore, deserving of support by citizens and Government alike.

The Draft Five-Year Plan for Nepal aims to present in outline a practical programme for economic and social development upon which all elements of the population can unite with confidence and enthusiasm. The central purpose of the programme is to raise production, employment, standards of living and general well-being throughout the country, thus opening out to the people opportunities for a richer and more satisfying life. The scope of the programme is broad, envisaging simultaneous advance on many fronts : agriculture, forestry, mining, industry and commerce ; education and health ; co-ordinated village development and other multi-purpose projects ; transport by roads, ropeways, railways and airways ; postal, telegraph and telephone communications ; surveys, research and many types of technical training ; and the improvement and modernization of governmental institutions to render them more efficient in performing their sole function of service to the nation.

Progress in all of these spheres is of vital importance to the country as a whole and should, as far as possible, be kept outside the scope of political controversy. It is, of course, a part of the healthy functioning of an expanding democracy that there should be disagreements as to methods and criticism of performance. But the basic purposes of development—the ends to which the people and their Government need to be jointly committed—require the loyal support of all groups. Given such support, these common goals of endeavour and the expanding activities to which they give rise can bring to the nation a growing sense of unity and direction as well as increased stability in the administration of its affairs.

The Process of Economic Growth.

For generations the economy of Nepal has remained virtually static. Until 1950-51, when there was a change in regime, we

were one of the most isolated countries of the world, cut off from effective contact with modern influences which in varying degree were transforming the economic life of most other nations. It seems probable that during the preceding century and more a growing population pressed ever more heavily against the means of subsistence, and that the living standards of a majority of the people suffered an appreciable decline. In the absence of any substantial compensating economic development, low level poverty became the lot of a large proportion of our citizens.

There is in this fact no cause for dismay, for experience has repeatedly shown that centuries of relative immobility in the economic life of a nation may be followed by an era of new vitality. Progress is necessarily slow, however, during the earliest years of a development programme when attention must be devoted chiefly to the laying of solid foundations for future advancement. During the past five years we have witnessed the beginnings of change in Nepal: the advent of a new Government pledged to democratic and welfare objectives; multiplying contacts with the outer world, including periods of study and observation abroad for selected younger officers of the Government; the inauguration of foreign aid programmes of increasing magnitude; and the launching of a variety of development programmes and projects. Within the past year Nepal has joined the United Nations, welcomed an unprecedented number of international visitors—including those who attended the Coronation of His Majesty King Mahendra, and initiated a Five-Year Plan for economic and social development. These are significant events. But it cannot yet be claimed that the economic status of the country as a whole has altered notably, or that a new, progressive trend has been established.

The key to economic progress is economic growth, and economic growth is measured primarily in terms of productive capacity. It may be said, broadly speaking, that a fundamental rise in living standards takes place only when a nation's production of goods and services is expanding more rapidly than the population. Fragmentary evidence suggests that the population of Nepal is now growing at a rate of not less than 1.5 per cent per year. It follows that production must expand by an equal rate even to maintain the present standard of living. A considerably higher rate of increase in production, sustained for many years, is necessary to assure a basic advancement in the nation's economic well-being. How is such an acceleration in production to be achieved and sustained?

Many factors enter into the determination of how much, and how rapidly, a nation produces. The attitudes and incentives of workers, for example, or the competence of management, or

the size and accessibility of markets may exert a considerable influence upon the volume and rate of output in a given industry. But the key factors in the growth of production in recent times are technology and capital equipment. This is why increasing attention is paid to improved methods of production whereby extraordinary increases in output may be achieved, sometimes without substantial new investment. It is also the reason for an increased focusing of attention upon capital formation—that is, upon the proportion of current output that can be saved and devoted, not to consumption or hoarding, but to needed expansion in the total stock of capital goods including tools, machinery, plant, vehicles, power equipment, and even transport and storage facilities.

Capital equipment may be augmented, in the short run, by foreign aid, or by borrowing, or by an inflationary expansion in purchasing power. But in the long run, a nation's capacity to save and invest in sound productive enterprises, private or public, sets the pace of economic growth. A low rate of saving and investment—or of capital formation—is easier to attain but it means a relatively slow increase in production and living standards. A higher rate requires more self-discipline, for it means a greater proportionate sacrifice of present comforts for the sake of increased security and more rapid progress in the future. In both cases the effect of capital equipment upon production depends not only upon the extent of investment in such equipment, but also—and no less—upon the efficiency and economy with which it is used.

Planning and Action.

In economic planning of an advanced and refined character, these key elements and related factors in economic growth become the subject of full, objective analysis. A variety of statistical data, regularly maintained, may be employed to portray the present state of the economy and the character, rate and effect of changes taking place in it. On the basis of such data it is possible to set up reasonably realistic production targets for specific industries or for larger economic sectors, or to consider in quantitative terms the allocation of total resources to consumption, investment and other purposes. Advanced economic planning also presupposes the existence of a Government with the power, the administrative machinery, and the experienced personnel required to formulate and execute economic policies on a national scale.

These conditions are not usually found in countries which, like Nepal, are on the threshold of new development. It is, of course, important, in such event, to expand as promptly as possible statistical services which are needed not only for plann-

ing purposes, but also for the making of day-to-day determinations in both public and private sectors of the economy. It is even more important that the capabilities of government for decision and action be rapidly increased. Both of these objectives are given high priority in the Draft Plan. Pending the growth of statistical services and the development of more effective governmental administration across the country, planning is necessarily of a rough and ready character, based on incomplete data and adjusted to the Government's increasing but limited capacity to carry out the programmes and policies envisaged.

During this early, transitional period it is neither necessary nor desirable to postpone action until perfected plans can be formulated. The economic needs of the country are so urgent that we cannot afford to wait until all of the ingredients of refined planning are present. In due course our goals can be defined more precisely and will be pursued by increasingly effective methods. But in the interim, much useful work of a foundational or ground-breaking character can be accomplished which will benefit the country, advance the competence of the administration and contribute to the realism of future planning.

Aims and Priorities.

During the coming autumn and winter a preliminary assessment will be made of the present status of our national economy and its potentialities for growth. Studies will be conducted, with expert assistance, on the extent and quality of our resources, and volume of our national production and income, the basic features and present functioning of our economic life, the institutional changes needed in order to foster most effectively our own economic advancement, and the most rational utilization of available resources in the interest of healthy economic growth for the nation as a whole. The resources to be evaluated include manpower availabilities in different occupational groups and at various levels of education and skill, in the light of which an assessment will be made of training programmes and facilities needed to meet the skilled manpower requirements of the Five-Year Plan. To the extent that available data from all sources permit, preliminary and tentative estimates will be made of physical resources in land, water, forest and minerals. And further investigation will be conducted into the financial resources that can be drawn upon for the conduct and acceleration of development programmes.

Such an assessment, subject to continuous amendment as additional facts become known, will be supplemented by special surveys and research as needed not only for general planning but also for information and guidance in relation to each sector of the economy. Much can be learned, of course, from the results of extensive research in other countries; it would be wasteful

to duplicate here research projects already completed elsewhere. The survey and research projects to be accorded first priority will be those, specifically related to conditions in Nepal, which have immediate relevance to the objectives of the Five-Year Plan. There is need, for example, to carry forward experimental studies now being made of the adaptability of various crops to soil and climatic conditions in the different geographic regions of Nepal ; or to investigate at first hand the factors favourable or unfavourable to the establishment or expansion of a particular industry.

It is sometimes asserted that the essence of planning is simultaneous advance on all fronts. From the standpoint of the multiple needs of man, or that of the interdependence of the various sectors in a development programme, this is a rational view. But the possibility of advance on many fronts at once depends upon the availability of competent administrative and technical personnel, upon the physical and financial resources that can be tapped, and upon the stage of development of such basic auxiliary services as transport, communications and power. This being true, high priority is given in the Draft Plan to training of personnel at all requisite levels, improvements in the efficiency of governmental administration, betterment of the tax system and its management, the introduction of a nation-wide village development programme, agricultural extension activities, the collection of statistics, and the expansion of basic services contributory to all aspects of economic expansion. The rate at which the action programmes for major economic sectors can be implemented will be conditioned upon the rate of progress achieved in these foundational areas of development.

The development programmes envisaged in specific sectors of the economy, and the priorities within these programmes, are summarized in later chapters. Special note should be taken, however, of the emphasis given to the Village Development Programme. More than 95 per cent of the people of Nepal are farmers ; the manner and extent to which they are helped in achieving greater economic security and a better life will provide the acid test of the development programme. The problems of a farm community are closely related and interdependent. Other countries have found, through trial and error, that a multi-purpose programme embracing education, health, agriculture, small-scale industry and co-operative organization are more likely to take root, and to generate local initiative and enthusiasm than separate approaches by different governmental agencies to separate sectors of economic and social life in rural areas. Already initiated on a small scale, the multi-purpose approach adopted for the village development programme will be extended

as rapidly as our resources permit, with a high priority in the development Plan as a whole.

The number of projects which stand in need of support, under the various programmes of the Five-Year Plan, is expected to run far beyond the financial resources available. The criteria to be applied in determining priorities of development programmes will, therefore, require careful determination. Preliminary analysis, subject to revision, suggests the desirability of according priority consideration to projects which : (1) promise any significant increase in production ; or (2) are capable of early expansion, to the benefit of the population sector concerned and of the national economy, at relatively low cost and with currently available or rapidly obtainable personnel ; or (3) are well adapted for training needed personnel ; or (4) will contribute to the growth of administrative organs essential to the carrying out of priority activities ; or (5) may be expected to contribute to an early expansion of available natural resources ; or (6) are responsive to local initiative or expressed desire among the people most directly concerned ; or (7) may be well and rapidly integrated with other priority activities envisaged under the Five-Year Plan ; or (8) are important to the planning of future operations—through such foundational work as the conduct of well-conceived surveys and research projects.

Principles and Policies.

In considering the objectives of a development programme and how they may be reached, there is frequently a tendency to overemphasize the role of Government, and to underemphasize that of the people. This may be due partly to a preoccupation, in governmental circles, with national plans, organizations and budgets ; it may be due partly to lack of sufficient contact with the people of other districts, or of experience in working with them, and a consequent failure to recognize adequately their innate capacities. Whatever the cause, it is most important that the role of the people be given full weight. For the first principle of an effective development programme is that its motive power must be found in the awakened interests, the new hopes, the aroused energies, and the co-operative endeavours of the people. Government leadership is crucial at all levels, but effectual leadership in a democracy is that which calls forth, welcomes, and responds to the creative urges of the people, then points to ways in which they can be channelled into joint efforts for the benefit of all. Leadership so oriented is not so much concerned about what is done *to* or *over* people ; it is very much concerned, however, about what is done *with* and *by* the people. This emphasis runs through all parts of the programme. Village development is predominantly a matter of helping the people to help themselves

and each other. Agricultural improvements have little meaning until they are intelligently applied by individual farmers on a rapidly widening scale. The best-laid plans for irrigation, transport, industry, forestry or mining will soon come to naught if sole reliance is placed upon what the Government bureaucracy can itself accomplish, without regard to the necessity for public understanding, participation and support. There is always need for a blending of leadership and local initiative. And it is through local initiative in carrying forward constructive projects that future leadership may best be revealed and given opportunity for development.

In its attempt to be fair and impartial in the administration of the Five-Year Plan, the Government faces an inescapable dilemma. It can, of course, make clear its determination not to tolerate discrimination on account of race or class or creed. But ideally it should, in addition, be able to give assurance of equal attention to the needs of all the people from the very inception of the programme. But this is impossible, due to severe limitations in resources—human, material and financial. It becomes necessary, therefore, to consider how the best results can be achieved for all the people in the long run. A few types of activity, such as the distribution of better seed, may be extended rather rapidly. But many projects, such as village development, must be initiated on an intensive basis in selected localities, spreading gradually until ultimately the whole country is covered. The localities selected for more intensive effort will at the outset be dispersed among geographic districts; thereafter, demonstration of local initiative and capacity may play an important part in the determination of localities next chosen for intensive development programmes.

A question of justice is also involved in the basic problem of the distribution of income. If this issue is ignored, the Five-Year Plan will fail to meet its objectives. For the wealth resulting from increased output would then be channelled into the hands of a privileged few, leaving the mass of the people little benefited and without incentive to continue their co-operation in developmental programmes. The provision of an increasingly fair return to workers from their own efforts—through land reform, co-operative organizations, more equitable taxation, and other means—is, therefore, not only morally sound but also imperative from a practical standpoint.

The question of public versus private enterprise is here approached from a practical rather than a theoretical or doctrinaire standpoint. Our aim is a mixed economy, with Government ownership and operation where this is clearly in the public interest, or where private capital is unable to launch an urgently needed and sound enterprise. Thus railways, ropeways, air

transport, communication facilities and larger power projects are expected to fall into the public sector, possibly accompanied by a few mining or industrial ventures. But it is not proposed that Government shall undertake, with its already heavily taxed personnel and financial resources, the burdens of investment and management when private interests, which should carry a substantial share of new investments, are able to do the job as well or better. In such cases, the policy of the Government will be to encourage private initiative in developing a diversified pattern of industrial production—by assuring opportunity for a profitable return upon investment, by providing information and guidance when feasible, and by exercising only such regulatory authority as may be needed to protect the interest of the community as a whole. At the same time, it is proposed that the Government shall take steps to improve the “climate” for investment through such measures as tax revisions and currency stabilization.

It is expected that during the first years of developmental efforts we shall, due to our limited resources, rely heavily upon foreign aid. But it is most important that we do not become over-dependent on such assistance. Aid should never be regarded as a substitute for our own efforts, but as a supplement to them, enabling us to move more rapidly through the foundation-building phases of our own development. We should first determine how much can be done with our own resources, then see where and how aid from friendly governments, if it becomes available, can be used most effectively in support of an extension of our own efforts, upon which our reliance must be based.

CHAPTER 2

ADMINISTRATION

Successful conduct of the Five-Year Plan is inconceivable without substantial modifications in our governmental organization and the creation, as needed, of new mechanisms. For the administrative machinery which we have inherited from the past is coated with rusty procedures, laws, regulations, and practices that slow down and obstruct even routine operations. To carry out a many-sided programme of national development calling for daily decisions and extending across the country until it ultimately reaches every village, we require an efficient, smoothly running executive organization. How can this be achieved ?

One alternative would be to adopt, as one of the major objectives of the Five-Year Plan, a complete overhauling of the structure and procedures of government. There is danger, however, that so large an administrative undertaking, raising many issues and possible controversies, would absorb energies urgently required for other parts of the programme. A second alternative might be to set up a new, separate organization to administer the Five-Year Plan—geared to action and freed from needless encumbering rules and regulations. Such an attempt to set up a "Government within a government" having separate lines of authority and separate procedures and pay scales would also, however, entail risks—risks of confusion, jealousies, and a weakening of the permanent agencies of the Government.

The administration actually envisaged is a compromise between these extremes. The permanent agencies of the Government will be given the major responsibility for the planning and execution of development work in their respective spheres, subject to such co-ordination and direction as may be necessary at national and local levels. New agencies will be created only when clearly needed. Changes in rules, procedures and pay scales deemed essential to the efficient administration of the Five-Year Plan will be undertaken, under proper authority, in such a manner as to afford, on the one hand, requisite latitude for effective operations and, on the other, to avoid any needless administrative schism. The innovations adopted should serve as precedents for general administrative improvements; whenever possible, they should be along lines capable of extension, in due course, to the executive branch of the Government as a whole.

The organizational pattern contemplated may be sketched out briefly. The Cabinet as a whole will sanction broad development programmes, preliminary allocations of funds as between regular and developmental purposes, and annual budgets. Top-level operating authority will be vested in a Cabinet Development Committee. A Planning Commission consisting of both official and non-official members will meet frequently to review the progress of the Plan and advise on its content. The Government ministries will conduct the Five-Year Plan operations falling within their respective technical spheres; responsibility for co-ordination will reside in the Ministry for Planning and Development. Within this Ministry, a Planning Secretary will initiate and correlate planning activities, review all programmes, projects and budget estimates for development, and maintain close contact with all developmental operations; he will serve concurrently as Secretary to both the Cabinet Development Committee and the Planning Commission. Technical committees will be attached to each ministry. An Administrative Panel will examine and advise the Cabinet Development Committee regarding all proposals having to do with terms of employment or administrative rules and regulations applicable to personnel engaged in Five-Year Plan operations, and also any proposals relating to administrative and financial procedures or delegations of authority. A special committee will be appointed to advise on the co-ordination of foreign aid. A Finance and Administration Controller will co-ordinate and consolidate development budgets, supervise disbursements from a Development Fund, scrutinize development programmes and evaluate their progress, render periodic accounts, audits and reports, and prepare for approval administrative rules and regulations.

Within the district, Badahakims (District Governors) will be responsible for general administration and supervision of developmental activities. In districts where development is more intensive, the Badahakims will be assisted by District Development Officer and staffs of technical advisors appointed by executive agencies of the central Government. These advisors will receive technical direction from their own ministries or departments, while serving administratively under the district development officers. For village and rural development work, each district will be divided into Blocks, staffed by village development officers with technical assistants. Blocks, in turn, will be sub-divided into "Mandals", each with a number of villages, where trained Village Level Workers (Gram-Sevaks) will be stationed to co-operate with the local populace in initiating and carrying forward a varied development programme; when problems beyond their competence arise, they will enlist the aid of

the specialists at the Block level. Supervising this district and local administrative network will be a Village Development Administrator, with the status of Joint Secretary in the Ministry of Planning and Development. He will work in co-operation with a Technical Committee composed of the heads of all technical departments.

There will be an annual development budget, apart from the Government's regular budget, to cover programmes and projects under the Five-Year Plan ; this development budget will be prepared, over a period of months, according to well-defined procedures. When it has been finally approved, department heads will be notified as to the amount of the funds they are authorised to withdraw, by a standard procedure, for the financing of operations under their direction. All accounts of expenditures from the Development Funds will be audited within one year after the end of the financial year to which the audit report pertains.

Development Boards may be established as required, for special programmes or projects, under the provisions of the Development Boards Act. Such Boards, having a semi-autonomous character, may determine their own rules and procedures and rates of pay ; it is proposed, however, that in such matters they shall work in close consultation with the Administrative Panel. The Boards will be directly responsible to the Cabinet Development Committee. Their budgets, after review by the Planning Commission, will be submitted to the Cabinet for final approval.

CHAPTER 3

RESOURCES AND THEIR ALLOCATION

What resources do we have for a programme of national development. The most important, of course, is our people—hardy, alert, industrious, law-abiding. But the educated among us are only a tiny minority ; our country is critically short of administrators, technicians, and many types of skilled workers. Our material resources, unmeasured and in large part unexplored, are certainly considerable. We know that, apart from the land itself, we have rich forests, some mineral deposits, great water resources, genial climate, and mountains of unmatched grandeur. But the transport facilities, capital equipment and electric power needed for the development of these latent assets are almost wholly lacking. And our financial resources are slender. To marshal the energies required for a programme of internal development, and to procure what is most needed from abroad, we must have, in substantial amounts, both domestic revenue and foreign exchange. Both, however, are in short supply.

No magic can alter these realities. To rely wholly upon external aid would not only be damaging to our national self-respect and our capacity to manage our own affairs ; it would also be futile, for in the absence of a strong effort on our part, that aid would soon dry up. Only by increasing our own investment in economic and social development can a brighter future be assured. The pace of our advance will be conditioned by the revenues that we ourselves can muster and the intelligence with which those revenues are employed. This must be made clear to the people. For without their understanding, full participation, and willingness to share in meeting the cost, there can be no march toward democracy and no programme for the nation.

We begin with a handicap. The Government's administrative and defence establishments have grown during the past several years until annual budgets have reached a level of approximately 5 crores (50 million) rupees. Although economies must constantly be sought, no substantial reduction in current expenditures appears possible if minimal government functions are to be sustained. Because the country is poor and our administrative machinery not yet well developed, revenues have remained at a level of about 3.5 crores per year, leaving a recurrent budgetary deficit of roughly 1.5 crores. It is imperative

that, concurrent with the launching of the Five-Year Plan, our national finances be put on a firm basis. We have not reached a stage where we can safely resort to deficit financing. The budgetary short-fall of 1.5 crores a year, or 7.5 crores for the next five years, must, therefore, be made a first charge against the increased revenues that will be collected during the Plan Period, thus providing for a "normal" or regular Government budget balanced annually at the level of approximately 5 crores. Income and outlays for development will be over and above this regular budgetary level.

The total estimated cost of the Five-Year Plan, as now projected, is 33 crores (330 million) rupees. This total refers to governmental expenditures only; it does not include investments in the private sector which, under favourable conditions, may reach substantial proportions especially in industries and mining. We must first see what we ourselves can do, therefore, and be prepared to undertake that much regardless of whether or not foreign assistance is forthcoming.

It is calculated that Government revenues, over the next five years, can be increased by not less than 17 crores rupees if as a nation we are prepared to give full support to our development programme. The increase would come from three sources, taxation, internal borrowing, and proceeds from governmental services and sales. This calculation is based upon the following tentative estimates which, while subject to modifications and adjustments are believed in their totality to represent a conservative expectation. The figures are stated in lakhs rupees (1 lakh=100,000).

Government Income

<u>Income Source</u>	<u>Total Net Increase</u>
Taxes :	
Land revenue	62
Birta land tax	20
Customs duties :	
On imports from India	585
On imports from other countries	40
Excise taxes	31
Income tax	20
Loans :	
Development bonds	140
Payroll savings	120
Net proceeds from Sales & Services :	
Forest Products	565
Irrigation	10

Electric power	60
Ropeways	40
Telephone service	1
Wireless service	6
Total	
	Rs. 1700 lakhs
	Or 17 crores

The assumptions underlying these estimates may be mentioned briefly. One is that there will be law and order and gradual but sustained progress in the administrative competence and efficiency of the Government. Another is that the development programme, leading to an expansion in various types of economic activity, will in time contribute to a substantial broadening of the country's tax base and in the Government's direct earnings through sales and services. It is not assumed, however, that this will be sudden. Projected increases in tax revenue appear only partially in the First Five-Year Plan, and then mainly in the latter part of the plan period. The Government, it is anticipated, will seek to realize progressively a policy of taxation in accordance with ability to pay. Such a policy is reflected in the above table. For example the existing land tax, which accounts for roughly a third of the Government's income, is expected to provide less than 4 per cent of the increase in revenue required to support the Five-Year Plan. Similarly, the proposed taxes on income and on Birta land, affecting upper income groups, may be taken as evidences of a policy of seeking increasing equity in our tax system.

Land revenues may be increased somewhat in the second year after a preliminary survey of land holdings and rights, but the gains shown above are based upon expected increase in returns a full-fledged cadastral survey, to be about half completed during the Plan Period, brings to light extensive acreage on which no taxes are now being paid, and provides a basis for differential tax rates on different classes of land. There is popular demand, and general agreement, that taxes must be levied on Birta land. Consideration is being given to a revision of our tax system, towards the end of the Plan Period or soon thereafter, whereby the value of property and actual produce from the land would form the basis on which taxes are computed.

The sharp projected rise in import customs revenue is based upon anticipated agreement with the Government of India for direct purchase of excisable goods from manufacturers in India and the levying, at source, of import duties. About three-fourths of Nepal's 15 crores per year imports from India consist of textiles, cigarettes, sugar, petrol, etc., on which products excise taxes within India average about 20 per cent. As Nepal's

customs administration is perfected with 17 check-posts on the India-Nepal border, the above system can be implemented. Assumptions as to the time required, and the rates of duty to be levied, are believed to be conservative. Additional customs revenue, to a total of at least 40 lakhs during the next five years, should be realized from duties on imports from overseas and modest export duties, recognizing that the latter should not be allowed to cut down on the value of our export trade. It is believed that the range of commodities on which there are now internal excise taxes (hides and skin, wines, and narcotic drug) can be extended to include tobacco, jute, and other items. A graduated income tax, in principle, should be initiated as soon as possible. The experience of other countries indicates, however, that this is a difficult tax to administer effectively, and that a preparatory period must be allowed for the development of the necessary organization.

Development bonds or certificates are a normal and desirable method of channelling private savings into the financing of the country's basic development. Some time is required for suitable preparation in order that the country's first such bond flotation may be successfully carried out. Compulsory savings among Government employees, with assurance of a reasonable return in interest, can contribute significantly to the development fund and give to Government personnel a direct stake in the success of the Five-Year Plan. Such savings must be preceded, however, by such salary increases as are necessary to fundamental security, dignity and efficiency in Government service.

Among the direct Governmental operations planned, the sale of forest products, through Government controlled corporations, is expected to yield the earliest and largest net returns during the next five years. The estimates shown are based upon what are believed to be conservative calculations pertaining to operating costs and existing or potential markets. A moderate cess on water from Government-constructed and owned irrigation schemes is expected to begin yielding returns not later than the fourth year of the programme. The same is true as regards the larger returns expected from the sale of electricity as small power projects go into operation, and from enlargement and extension of the present electrically operated ropeway. Although the anticipated gains in revenue are small, allowance is made for increased returns on telephone and wireless services as facilities are expanded.

From the estimated increase of 17 crore rupees in total Government income during the next five years, 7.5 crores must be earmarked, as indicated above, for stabilizing the nation-

al budget, leaving 9.5 crores for allocation under the Five-Year Plan. To this may be added foreign assistance already committed, under the Colombo Plan, in the amount of 300 lakh rupees for power projects, 50 lakhs for minor irrigation schemes and 80 lakhs for aerial survey work, making a total of 430 lakhs.

The Government of India has indicated to our Government that the aid which will be provided in support of our Five-Year Plan will be of the order of 10 crores, including the 430 lakhs cited above. The United States has been providing a minimum 50 lakhs of economic aid annually which if continued as expected will provide 250 lakhs or more during the Plan period, over and above the cost of technicians and scholarships made available. These amounts, added to the 9.5 crores expected from internal revenues, makes a total of 22 crores against which firm programming can proceed without waiting for firm commitments on further foreign assistance. Pending such commitments, these 22 crores may be regarded as our central and minimal development fund. Since the increases in revenues expected will develop mainly during the 3rd, 4th, and 5th years of the Plan Period, it is intended that reserves will be drawn upon to raise our governmental investment in the Five-Year Plan to totals of at least 1 and 1.2 crore rupees during the first and second years, respectively, of the Plan Period.

As indicated above, the entire Five-Year Plan as projected calls for an outlay of approximately 33 crore rupees. Full execution of the Plan would require in addition to the 22 crores just cited, about 11 crores, and this would come, necessarily, from external aid. Negotiations are now under way looking toward special assistance from both India and the United States in support of basic transportation projects. These negotiations afford reasonable ground for hope that, concurrent with our own exertions, the added assistance from India and the United States, and also through the United Nations, may be in sufficient volume to enable us to proceed substantially in accordance with the full Five-Year Plan as now projected.

One of the most difficult and crucial tasks in planning is that of making a wise allocation of the resources available. It is not too much to say that every sector of the economy is affected by every other sector. The judgment exercised in evaluating priorities in a development programme, and in estimating the amounts that should be allocated from limited resources to the different categories of developmental activity, must be based on many considerations. Certain criteria for the according of priority to selected projects have already been mentioned. The programme estimates presented by the responsible departments concerned, and repeatedly screened in departmental and committee conferences, must be taken into full account. It is desirable also to weigh

the administrative experience of the department concerned and its growing capacity to carry out a programme of the dimensions envisaged. The long-range importance of each aspect of the programme must be thoughtfully assessed. But it is necessary also to consider the contribution of each aspect, in the shorter run, to production, incomes, revenues, and the laying of stronger economic foundation for continuing and broadening development. Hard choices must be made.

Concerning one priority, however, there is universal agreement, and that is the priority to be accorded to the training of skilled personnel for all parts of the development programme. It is anticipated that, on the average, at least five per cent of the total five-year outlay for each segment of the programme will be spent for training within Nepal; in addition, substantial amounts of aid funds will be expended for advanced training of technicians and administrators abroad. Training costs will be especially heavy during the first two years.

The estimates shown in the following tentative schedule of total expenditures under the Five-Year Plan are the product of many conferences and many judgments. But they are not intended to be final. It is expected that in light of discussions within the Planning Commission and by the public as well as re-examination within the Government itself, the Plan budget for the first year will be finalized and a revised schedule will be drawn up showing anticipated outlays during each of the ensuing four years. The estimated expenditures appearing in the table below are in lakhs of rupees.

<u>Type of Development</u>		<u>Estimated Expenditure in Five Years. (Lakhs)</u>	
1. Village Development		275	} 895 = 2690
2. Agriculture		120	
3. Cadastral Survey		70	
4. Co-operative Societies		10	
5. Land Reform		20	
6. Irrigation		200	
7. Forestry		200	
8. Transportation :			
Roads	500		
Railways	330		
Ropeways	150		
Airways	60	1040	
9. Communications			
Telephone	25		
Wireless	25		
Post Office	25	75	

10.	Power	300
11.	Industry	190
12.	Minerals and Mining	50
13.	Commerce and Tourism	10
14.	Rapti Valley Project	140
15.	Settlement & Government Housing	125
16.	Health	250
17.	Education	190
18.	Surveys, Research, Statistics & Publicity	35
Total Outlay for the Five-Year Plan		Rs. 3300 lakhs
		or 33 crores.

CHAPTER 4

VILLAGE DEVELOPMENT

With 95 per cent of the population engaged in farming, any programme for improving the condition of the country must naturally be devoted in large part to the development of rural areas. Such a programme must emphasize increased agricultural production and a consequent rise in farm incomes, but it needs also to take into account other urgent problems confronting rural communities—problems of education and health, of water supply, housing, cottage industry, of transportation, marketing and credit, of social and cultural activity. Countries with the most progressive rural extension services have tended in recent years to be oriented not to agriculture alone, but to the agriculturalist as a many-sided human being, and to be concerned therefore, with the interconnected problems of farm families and communities. Extension services built upon such an approach are found to be more lasting in their effects than efforts to deal separately with individual aspects of the farmer's life. It is this multi-purpose approach which is planned for the rural communities of Nepal.

A significant beginning has been made through the establishment of village worker training schools in Kathmandu, Pawanipur and Nepalgunj, and the start of village development work in a few centres. Now a much larger programme must be launched.

Such a programme cannot be developed overnight. It requires an organization adapted to our own rural situation and in keeping with our special problems. It requires technicians and trained administrative personnel. To reach all of the villages of the country with a balanced, inclusive programme of development may take 20 or 25 years. We intend to approach the task in three main stages.

The first stage representing the earliest and lowest level of development, will be that of *local improvement works*. This stage will be initiated as promptly as possible in all districts. A sum of Rs. 20,000 or more, placed at the disposal of each district each year, will be used to subsidize small works of local importance like a road, a well, a school building, village hall, park or playground. Villages will contribute at least half the cost and all the unskilled labour required. This local initiative will be stimulated, and the immediately felt benefits of these

jointly sponsored projects will arouse enthusiasm and prepare the ground for more basic measures.

Localities showing the greatest enterprise in the first stage will qualify for promotion to the second, which may be termed *rural development*. The measures undertaken in this stage will generally be of a kind capable of fairly rapid extension, such as the demonstration and distribution of good seeds and improved fertilizers, the expanded cultivation of vegetables and fruits, poultry keeping, and scientific protection against plant and animal diseases. Encouragement will be given to the construction and opening of primary schools. Vaccinations and inoculations will be widely provided, drinking water improved, and medicine boxes supplied to groups of villages. About one third of the country will be covered, with this stage of development, every five years, at an estimated cost per block of Rs. 1,65,000 in the first year and Rs. 1,32,000 per year thereafter.

The third and highest stage is that of *village development*. In this stage all the previous types of works undertaken will be intensified and, in addition, new activities will be initiated. These will include soil conservation, greater help in improving farm practices, the creation of health, maternity and child welfare services, an expansion of secondary education and social education, and the stimulation of arts, crafts and local industries. The estimated cost per block in this stage is Rs. 2,77,000 in the first year and Rs. 2,10,000 in succeeding years.

It is planned, in a few blocks, to undertake from the outset the broad range of activities normally associated with the second and third stages. This will make it possible to demonstrate to the people the kind of development ultimately planned for all village communities, to understand better where operating difficulties and weaknesses lie and how the plan should be modified, to test the kind of administration required for the future, and to build up knowledge, experience and confidence for the tackling of problems on a wider scale.

For administrative purposes the country will be divided into 150 development blocks, averaging around 200 villages each. Making allowance for transport and travel difficulties, the hill blocks will cover around 10,000 families each, as compared with roughly 13,000 families per block in the Terai. Local improvement works will be initiated in all of the blocks as soon as possible. According to plan, at the end of five years the rural development stage will have been reached in 32 blocks and the village development stage in 16 more blocks. If these targets are met, about a third of the people of the country, at the end of the First Five-Year Plan, will have begun to participate in the benefits of the second and third stages of development. In the

light of experience in other countries, this rate of advance is believed to be realistic and attainable.

The success of this programme will depend to a large degree, however, upon the availability of trained personnel : administrators, multi-purpose workers, and specialists and assistants to be detailed by the technical departments of the Government for work in agriculture, health, education, industry, public works, etc. From about 200 of such personnel now available there will have to be a steady build-up until, within five years, there is a total of more than 3,000 covering all essential categories. Our present training facilities are not adequate. The village worker training schools now functioning will have to be strengthened. Technical courses projected for this and other parts of the Five-Year Plan will have to be launched or expanded as promptly as possible. For the training of administrators and higher-level technicians, we shall also have to send selected personnel to appropriate institutions in India and elsewhere. This entire training programme must be viewed as a whole, and must be phased year by year to meet the expanding requirements of the Village Development Programme.

CHAPTER AGRICULTURE

It is estimated that at least 95 per cent of the population of Nepal is engaged in agriculture. Farm families, generally, derive a precarious living from crop and livestock production, often of inferior quality, on small holdings. Food shortage, already serious in many localities, is becoming more acute as our population continues to grow steadily. Economic improvement of the country depends fundamentally upon agricultural improvement. In determining what can be done, and how, much can be learned from the experience of other countries, where advances in agricultural knowledge and techniques have been accompanied by a remarkable growth of extension services capable of transmitting to millions of individual farmers the results of scientific research and experimentation.

Nepal's Five-Year Plan for Agriculture emphasizes both immediate action and the laying of solid foundations for future progress. Among the activities most likely to produce early results are the production and distribution of better seeds—of cereals, vegetables, grasses and forage crops; the introduction of more efficient farm equipment and tools; the introduction of better breeding stock; and the up-buildings and fuller use of the agricultural extension service. The longer-range developments required are many-sided and must be started early if we intend to ensure a healthy growth of our agricultural economy as a whole. Our current production and available resources must be assessed. The governmental organization required to carry out a vigorous agricultural programme must be developed, along with the teaching and training of personnel to keep pace with the timetable of the Five-Year Plan. Other departments of the Government are concerned with matters of great importance to agriculture, such as village development, land reform, co-operatives, and irrigation; day-to-day co-operation with these departments is imperative. And steady growth must be nurtured in each of the main lines of agricultural development, as briefly outlined herewith.

Agronomy and Demonstration Farms : There may be slightly more than 30 lakhs bighas (5 million acres) of land now under cultivation in Nepal. The principal crops are paddy, corn, wheat, oil seeds, sugar cane, tobacco, buckwheat, jute, fruits and vegetables. The percentage of acreage in each crop

is unknown. But it is known that very few new crops have been introduced, although the varied climate and soil of Nepal would permit production of a wide range of crops. Very few new tools have been introduced, or new methods adopted, for many generations. Poor methods of seed selection and storage have resulted in depreciation of varieties. Plant nutrients in the soil, removed by crops, have not been replaced. A practical programme in agronomy must be adjusted to existing facts, including a lack of trained personnel and of adequate supplies of good seeds and plants, lack of knowledge of present crop acreages and rates of yield, and illiteracy and low purchasing power among the farming populace. There will be an early emphasis on surveys to gain a clearer picture of the actual situation as regards crops, methods, and yields.

Action in the field of agronomy will centre about the establishment and operation of 32 demonstration farms in good locations throughout the country. It is planned that 18 of these will be functioning at the end of the first five years, including 4 divisional farms (beginning at Parwanipur and Pokhara), 6 subdivisinal farms, 7 district farms (starting at Rapti Valley, West No. 1, and Bhairawa), and a special farm at Kathmandu. The work at these farms will be centered upon the important existing or potential crops of the districts in which they are located, and will include research or demonstration on: (1) new varieties with special reference to disease and insect resistance, (2) improved cultivating practices, (3) better crop rotation and use of fertilizers, (4) mixed cropping or inter-cropping, and (5) moisture requirements. The demonstration farms will be closely integrated with the agricultural extension service.

Horticulture : Many kinds of fruits and vegetables can be grown successfully in Nepal. But in most districts little has been done to develop commercial orchards. Scattered fruit trees are often grown from seedlings ungrafted; fungi and insects are unchecked; the trees are not properly pruned; yields are low and much of the fruit is ruined or not used. Kathmandu valley has considerable vegetable production but little attempt is made to grow vegetables in the hill country. The objectives of the horticulture programme are: (1) to make a survey of present horticultural conditions and practices, (2) to delineate land suited to various horticultural enterprises, (3) to develop a nursery industry for supplying high grade stocks of plants and seeds, and (4) to disseminate knowledge of proper culture of horticulture products. Experiment stations, established in connection with the demonstration farms, will test varieties of fruits and vegetables under temperate, sub-tropical and tropical conditions. Special attention will be given to the production and dissemination of good vegetable seeds. A government nursery

farm will be established to provide high grade grafted stock plants for prospective orchard growers, who will be assisted in obtaining suitable land at reasonable rentals. Instruction will be provided to orchard growers in methods of handling both new and old orchards. Fruit trees take several years to come into production, but the benefits to growers and the consuming public should be large after six or eight years. Vegetable production and vegetable seed production should yield much earlier returns.

Botany and Plant Breeding : The objectives of this programme are (1) to obtain more efficient agricultural crops either by selection, cross breeding, introduction from other countries, or a combination of these methods ; (2) to disseminate information about new crops ; and (3) to educate farmers to the advantages of growing improved crops.

Preliminary work will consist of a survey of crops in Nepal and a collection of the better varieties which will be taken to a central breeding station. Much can be done by selection of the better strains from existing varieties. In other cases cross breeding is preferable, to combine desirable traits of two or more varieties. In some cases it will be more desirable to introduce new crops from other parts of the world. Wild relatives of crops will sometimes be used in cross breeding to get disease or insect resistance. Attention will be paid to climatic adaptation and to the efficient utilization of available plant nutrients. The central breeding station will require good laboratory equipment for study of various phases of botany, plant pathology and entomology ; facilities for controlled pollination ; and land for selection and trial studies. Linked with the central station will be eight zonal stations for trial plantings and limited plant selection and breeding work. The benefits of this programme, while gradual in coming, can be far-reaching. For agricultural production in Nepal can ultimately be increased by at least 25 to 30 per cent through improved varieties and new crops alone.

Plant and Animal Protection : Entomology and plant pathology works are getting under way in Nepal for the purpose of controlling the more common and destructive insects attacking plants, and parasites attacking animals. A laboratory is being established to identify the more common destructive insects and parasites and to help perfect practical, cheap methods of control. It is planned that an entomologist and pathologist with assistants will train and supervise field workers who will be organized into protection units for service on an expanding scale.

Soil Science : While the principles of soil science and management are widely known, research and testing are necessary to

their adaptation to new areas. Soil science covers : soil analysis, classification, conservation, and fertility ; soil chemistry, physics and biology ; soil and plant relations, i.e., the functioning of roots in soil ; soil management which includes proper tilling, aeration, use of manures, crop rotation, soil conservation and use of soil moisture ; and soil reclamation which puts into production soils which are potentially good but presently largely unproductive."

A central soil section will be organized under the Department of Agriculture with soil scientists and senior and junior soil technicians. There will be a main laboratory for studying soil and plant materials, and branch laboratories at the demonstration farms, equipped with mobile soil testing units. Work on field soil surveys will commence soon, to be followed by analytical laboratory work. Immediate attention must be devoted, however, to the training of requisite personnel. The benefits of soil science work depend on its quality and the effectiveness with which its results are disseminated. Proper use of manure, fertilizer and lime may, in time, increase yields by 25 to 50 per cent ; better tillage, crop rotation and water utilization may up production another 10 to 20 per cent. Land reclamation may add considerably to arable acreage.

Agricultural Tools, Implements and Machines : For centuries there was little or no change in Nepalese agricultural implements. Only recently, in the Terai, have steel ploughs and other modern implements and machines been introduced. Better agricultural equipment may contribute substantially to increased output. The objective, under the Five-Year Plan, is to encourage and facilitate the provision of implements that, as far as practicable, can be manufactured with local materials, that can be maintained locally, that can reduce the farmer's burden of hard labour, that are within the purchasing power of the farmer, and that can give him a good return on his investment. To gain this objective it is planned to study, at Parwanipur, the effectiveness of foreign and locally developed tools under Terai conditions ; a similar study is already under way in Kathmandu. Continuing efforts will be made to develop, and encourage the local manufacture of, tools and implements well adapted to farming conditions in both hill districts and the Terai, and then to extend their use through demonstration farms and the extension service//

Agricultural Marketing : The farmer is frequently at a severe disadvantage today in marketing his produce. If in debt, he must often sell when prices are low and buy back food or other necessities when prices are high. Illiteracy, lack of transport or communication facilities, absence of storage facilities, and lack of experience in co-operative organization all ten-

to leave the producer in a weak bargaining position for the sale of such cash crop as he may be able to offer, whether rice, ghee, potatoes, linseed, tobacco or jute. The first task, under the Five-Year Plan, will be to undertake a general survey of the existing structure and functioning of agricultural marketing institutions and channels, as a necessary basis for the planning of remedial action. The measures to be undertaken will include the formation of marketing and purchasing co-operatives, aid to farmers in constructing stalls and sheds and storage facilities for protection against spoilage, the standardization of weights and measures, and the establishment of standardized grades for agricultural produce. Improvements in marketing methods and procedures can be of distinct benefit to consumers as well as producers.

Livestock Development : The diet of the people in many districts could be substantially bettered in both quality and quantity by improvements in the breeding and care of livestock ; the production of blankets and clothing could also be greatly augmented. For at the present time the quality of livestock, and, therefore, of livestock products, is generally low. There is no organized breeding work to improve strains. Pastures are over-grazed and public grazing increases the incidence of disease and parasites. Facilities are wholly inadequate for the prevention and control of such diseases as rinderpest, H.S., bangs, foot and mouth disease, and tuberculosis.

Steady improvement in the condition and yield of livestock in Nepal can be accomplished through the establishment of competent animal husbandry and veterinary services, progressively staffed by trained personnel. These services, during the plan period, will : (1) survey livestock resources as to numbers, breeds, feeding conditions ; (2) make selections, by progeny testing, in each division of livestock ; (3) introduce Indian and other breeds for use in up-grading ; (4) develop artificial breeding as rapidly as good technicians and superior sires are available ; (5) establish a central breeding farm for all types of livestock and poultry, and other breeding farms as the programme progresses ; (6) develop local source of vaccines, serums and other preventive and control medicines ; (7) establish veterinary hospitals and dispensaries in all districts as rapidly as personnel and resources permit ; and (8) introduce and cultivate improved legumes and grasses, and demonstrate the value of hay and silage storage.

Dairy Industry : Dairying has been a very old industry in Nepal. The Terai region exports a large quantity of ghee (butter) to India every year. Similarly people living around the Himalayan region in the north export ghee and butter to Tibet. Lack of skilled knowledge regarding the purification of butter has deprived Nepal of a still larger profit from its export of ghee,

worth over Rs. ten millions at present. Absence of transport facilities, technicians and modern dairying knowledge among the people have also been factors in the slow progress of this industry. Recently, however, a beginning has been made, with U.N. assistance, in three centres.

The dairy industry is closely related to Agriculture. Development of this industry is not possible if simultaneous improvement of livestock and provision of feed are not maintained.

The following projects are contemplated, under the Five-Year Plan, for the expansion and further development of the dairy industry :

- (1) Milk collecting centres in Kathmandu Valley.
- (2) Central milk processing plant at Kathmandu.
- (3) Cheese making plants, using yak milk, in high hill localities.
- (4) Ghee purification centres at the exporting points in the Terai.

Provision will also be made to collect necessary data, beginning with a systematic survey, already under way, to locate the high milk producing areas in the country.

Fisheries Development : An acre of water in a pond or lake, when properly cultivated and managed, can produce more nourishing protein food than an acre of land. But fish farming has been unknown in Nepal until recently. The country's many lakes and rivers, in differing climates, should support a large variety of fish. Work already begun in the development of hatcheries, and the selection of suitable types of fish for breeding and for the stocking of our lakes and rivers, will be expanded as trained personnel become available. It is also planned to encourage and assist farmers in establishing commercial fishing, and to promote the building of ponds and reservoirs which may be used both for fish farming and small irrigation projects. The expansion of fisheries work, necessarily gradual, can in time provide one of the country's important sources of food.

Soil and Water Conservation : During past generations large areas of Nepal's hill country have been deforested, cleared of brush, or over-grazed resulting in continuing, appalling losses of precious top soil, as clearly evidenced by mud-laden streams after every heavy rain. The damage is increased by farming on over-steep slopes. Without grass or forest coverage, the soil that remains loses much of its moisture-holding capacity, with the result of flooding in rainy seasons. The consequence is less water for farming, for livestock, and even for domestic use.

And this means lower production and lower living standards for farm families.

There are to be five soil and water conservation projects during the Plan period : (1) The collection of hydrological and climatological data, since knowledge of the amount and distribution of rainfall is important in determining suitable control practices. (2) A survey of present rates of soil erosion and the amounts of land permanently ruined or badly damaged. (3) Establishment of a central station to determine what agronomic practices are best suited for checking and controlling erosion in Nepal. (4) Establishment of branch research stations and organization of soil conservation associations. (5) Initiation of a reforestation programmes with targets of 1,000 acres covered the first year, 2,000 the second, 4,000 the third, and a rapid increase thereafter. Progress in this programme will be handicapped until 1958 when a technician now being trained in Australia, and two in Allahabad, will return to form a nucleus of trained personnel who can train others and organize the work.

Agricultural Extension and Public Relations Service : The best techniques in all phases of agriculture are needed to raise agricultural production to its full potential in Nepal—which may be as much as 75 per cent above the present level. But the most up-to-date methods cannot bring results until they are applied, and they will not be applied across the country until there is built up an organization capable of explaining and demonstrating the new methods and techniques to individual farmers in all districts. In this all-important aspect of its work the Agriculture Department and its various sections especially the Extension Service, will co-operate closely with the Village Development Programme, with local government administrations, and with farmer committees. Specific projects will include : (1) distribution of improved seed to demonstrate villagers who will agree to follow recommended methods of cultivation and to pay back a measure of good seed, as produced, to be distributed to other villagers ; (2) distribution of simple, practical booklets, pamphlets and bulletins, with many visual aid illustrations, prepared by agricultural and educational specialists ; (3) teaching villagers through demonstration farms and other techniques ; and (4) bringing local problems to the research workers for practical solutions. The service will also promote home science and farm youth activities.

Agricultural Education : No Five-Year Plan for Agriculture can be carried out without trained personnel of the right calibre. Based on an assessment of needs for each of the programmes summarized above, expanding technical personnel requirements, at various levels of training, are estimated as follows for successive years of the Plan period :

	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
Graduated	42	19	17	15	15	108
Diploma holders	46	36	45	40	41	208
Skilled Workers	47	45	49	40	44	225
Total for Agriculture Department	135	100	111	95	100	541

First year requirements include personnel already available. During the Plan period, personnel at the graduate level will have to be sent outside the country for their training. It is planned that the senior and junior technicians, however, will be trained locally. The Agriculture Department will also co-operate in the training of village development workers.

To carry out these training responsibilities, plans have been developed for the establishment of a School of Agriculture with necessary farm and laboratory facilities. Personnel already trained will be used for teaching, and a close relationship will be maintained between the Department's research, teaching and extension work.

CHAPTER 6

CADASTRAL SURVEY

Traditionally, land revenues in Nepal have been ascertained on the basis of crude chain surveys of holdings, or by some ratio to the quantity of seeds expected to be needed for sowing, or to the area of ground that a pair of bullocks would plough in a day, or to the area that might be dug with a spade in one day. As a result, land records have not been properly kept; acreages are not known while titles and boundaries are not always clear. When, as often happens, actual holdings are larger than the registered acreages, the Government loses revenue. Without knowledge of the quality of land—as indicated by its market values, or slope, or erosion evidence, or suitability for producing certain crops—it is difficult to develop an equitable land tax.

A cadastral survey is an accurate survey of the quantity, value and ownership of land, on the basis of which correct land records can be established and, whenever desired, maps can be drawn showing titles and boundaries in detail. In the course of such a survey lands may be classified, and acreages devoted to various crops recorded. Cadastral surveys are important in clearing up confusions as to titles and boundaries, in developing dependable agricultural statistics, and in providing a basis for equitable land taxation. Heretofore, lack of trained technicians, equipment, and funds have prevented the initiation of a cadastral survey; these difficulties must be overcome.

Training "on the job" will expedite the development of lower level technicians required for such a survey. As far as possible, local people will be enlisted for training and for survey work, then given jobs in their own localities. Four zonal settlement officers, under a land Survey Director, will be responsible both for the training of personnel and the conduct of the survey in their respective zones. Gradually their staffs will be built up to include overseer teachers, inspectors, senior and junior surveyors and chainmen trained in the use of simple surveying instruments and equipment. The full staffing of the four zones (the senior technicians being trained abroad) will require about three years. Completion of the cadastral survey for the entire country, it is estimated, will take about eight years. In the Plan period, a little less than half the country will be surveyed, with maps prepared and tabulation completed. The ultimate cost will be divided as between Government and landholders. This project will not only pay its way but will increase Government's revenue from the land.

CHAPTER 7

CO-OPERATIVE SOCIETIES

As experience in many countries has shown, co-operative societies may be one of the most effective means for rectifying social injustices and safe-guarding to workers a fair return on their labours. A farmer may work long and hard to produce the best crop that he can, only to find that he must sell when prices are low, in order to pay his debts, then buy back seed and implements and even food for his family when prices are high. For this he may have to borrow again at usurious interest rates. If unable to make repayments in full, he may find himself getting more and more deeply enmeshed in debt. If he is a tenant farmer, he may have to pay the bulk of his produce or earnings as interest to the landlord. The worker in a cottage industry may find himself at a somewhat similar disadvantage, unable to buy raw materials or equipment on credit when he most needs them, or to sell his goods in a favourable market.

Co-operative societies, through which owner and tenant farmers, or town and village workers can combine to improve their economic status, are of several types. The most common—because they are the most generally needed—are credit co-operatives and marketing co-operatives. Through credit co-operatives farmers may, as an organized group, borrow money from a bank at a reasonable rate of interest and together assume full responsibility for repayment on schedule. Through marketing co-operatives they may put themselves, with their combined product, in a more favourable selling position, being able to market their goods at times and in places of their own choosing. Buyers' co-operatives, purchasing in bulk all kinds of commodities required by their membership, may achieve substantial savings. Often two or more functions are combined in a single society. Sometimes co-operatives take on additional functions, such as the distribution of improved seeds among their members, or the building of storage facilities for grain, or the collection, grading, processing and transporting as well as the selling of goods which their members have produced. Teaching farmers and other workers how to organize and manage a co-operative society is one of the surest ways in which to help people to help themselves and one another.

Although the ultimate aim of co-operative societies is to increase local self-reliance, organizational capacities and living

standards, Government may and usually does play a decisive role : in the training of specialists in all phases of co-operative work, in analyzing local conditions in order to ascertain the types of societies most needed in each locality, in creating an atmosphere favourable to the growth of co-operative societies, in teaching the local people how to organize and administer such societies in a democratic and efficient manner, in providing through state-controlled or state-regulated banks the initial financing required for loans to the co-operatives, and in setting up an inspection service to promote increasing efficiency and to guard against corruption and abuses.

In Nepal the fostering of co-operatives will be closely tied in with the Village Development Programme. That programme now calls for the launching, during the Plan Period, of Rural Development Programmes in 32 of the 150 blocks into which the country is divided for such administrative purposes, and for more intensive Village Development in 16 additional blocks. Co-operative offices or sub-offices will be established as a feature of each block programme. Specialists in co-operative organization will be trained in India or Ceylon, with funds provided through the Colombo Plan, at a rate which will enable the co-operative work to keep pace with the expansion of the Village Development Programme as a whole. Financing will be provided, for loans, at the lowest practicable rate of interest ; to handle this function, it is expected that a special Co-operative Branch will be established by the State Bank, and will be organized to function in all of the local offices of that Bank.

If the co-operative movement is developed in a healthy and efficient manner, it will progressively abolish excessive rural indebtedness, contribute significantly to the raising of living standards, and develop among the members of the co-operative societies versatility, capacity for organization, self-reliance, self-respect, and ability to conduct their own affairs in an honest and democratic way.

CHAPTER 8

LAND REFORM POLICY

The present generation in Nepal, as in many other countries, has inherited an agrarian system which fails, in important respects, to protect the rights and interests of those who work in the land. In a country that is 95 per cent agricultural, this is a fundamental problem, as recognized in the Royal Proclamation on Agrarian Reform. The term "land reform" has now acquired a very wide meaning. The aspects of land reform believed to be the most urgent in Nepal, and actions contemplated in relation to these aspects during the term of the Five-Year Plan, may be summarized briefly.

1. *The protection of tenants* : No statistics are available showing the extent of tenancy, as compared to owner cultivation, in Nepal. But it is known that tenancy poses a serious problem in many sections where it is quite widespread, where rents are unregulated by law, and where tenants have no legal protection against arbitrary conviction. It is planned that during the first year of the Five-Year Plan, legislation will be framed and proposed for enactment; the proposed law will place a reasonable upper limit upon the rents which landlords are allowed to collect in cash or in kind, and will provide for reasonable and just protection of the cultivator's security of tenure on Raikar as well as Birta land.

2. *The protection of hired workers* : This sector of the agricultural population occupies the lowest status economically and socially. Legislation will be drafted and submitted for enactment, fixing minimum wages and possibly maximum hours for hired workers, and regulating the employment of women and children.

3. *Resettlement of landless farmers* : Whenever new arable land is opened up for resettlement—through irrigation, drainage, flood protection or malaria control programmes—priority consideration will be given to the settlement on such land of landless farmers.

4. *Birta Reforms* : A Birta is an assignment of land revenue to the Birta landholder (Birtawala) and not to the Government. It originated in governmental largesse for meritorious service, etc. The problems posed by this carry-over from a previous era are somewhat complex, with variations in the status and obli-

gations of the Birtawalas and their tenants. The question of Birta lands has been agitating the public mind. There is sentiment in favour of the abolition of Birta holdings, with compensation to present owners, and, pending such action, for payment of land taxes by the Birtawalas. This problem is receiving careful study with a view to proposing suitable legislation.

5. *Provision of agricultural credit* : Many of our farmers have to borrow in order to meet their seasonal requirements for seeds, tools and the like, and they are able to do so only at exorbitant rates of interest. Protective legislation, setting upper limits to the rates that may be charged, is under consideration ; such legislation may also provide for conciliation boards and a compulsory scaling down of bad debts. On the positive side, active efforts will be made to hasten the growth of co-operative credit and marketing societies, which will be financed in part from State Bank or other governmental sources—thus bringing to the farmer at reasonable rates of interest the funds needed to meet his pressing requirements.

6. *Consolidation of fragmented holdings* : In Nepal, as in other Asian countries, the fragmentation of agricultural lands has long been a handicap to efficient production, in the hills and on the plains. Our policy in respect to this problem will be one of stimulating voluntary efforts, as through co-operative societies, to bring about a gradual consolidation of holdings.

Concurrent with the above reform measures, a more adequate basis will be built up in land records and statistics. Pending the development of a full cadastral survey, which will take years, an effort will be made to improve existing land records, making use of village committees. (Present records show names of owners only, not the names of tenants of cultivators.)

Much attention will be given during the early part of the Plan Period to the evolving of an organization without which land reform measures, however well conceived, cannot be enforced. Consideration will be given to the appointment of a high-level Land Reform Commission, truly representative of all agrarian interests, to help in formulating and guiding the Government's land reform policy and its execution.

CHAPTER 9

IRRIGATION

The population of Nepal, now about 84 lakhs (8.4 million) will probably be more than a crore (10 million) within the next 15 years. This means a serious food problem for our country; even now, food is insufficient and under-nourishment prevalent in some districts.

One of the surest means of expanding food production is by increasing the availability to farmers of an assured, abundant water supply, through the improvement and extension of present irrigation work and the development, where practicable, of new irrigation projects. The agricultural population is familiar with intensive irrigation farming and we have extensive water resources. Tributaries from the mountainous north join to form three main rivers cutting through valleys to the south, the Kosi in the east, the Gandaki in the central west, and the Karnali in the west; these each carry a minimum discharge of nearly 10,000 cusecs. Other rivers, discharging a minimum of 150 to 300 cusecs, are the Trijuga and the Kamla in the east, the Bagmati in Kathmandu Valley, and the Tinau and Rapti in the West.

The present state of irrigation in Nepal is not satisfactory. Previously built works—the Chandra Canal, the Jagdishpur Reservoir, and the Judha Canal system are in need of repairs. A large number of smaller irrigation systems developed co-operatively by cultivators themselves, in some cases with government help, are over-dependent on steady rainfall supply and tend to be wasteful in the use of water. The development of a vigorous irrigation programme has been deterred by lack of transport facilities, funds, and trained personnel. But the most serious obstacle has been a lack of proper administrative machinery, this is now being overcome.

Several criteria will govern the determination of projects to be given priority consideration. One is wide geographic distribution. The transport of foodstuffs in quantity is so difficult and costly in most districts that we should help each to become as self-sufficient as possible in food production. Special consideration will be given to works in areas of chronic or acute food shortage. Projects promising the most substantial return on investment, in terms of enlarged agricultural output, will of course command high priority; important among these are projects which will bring considerable new arable land into

cultivation. Special consideration will be given too to irrigation works that fit into multi-purpose river projects involving flood control and electric power production as well as irrigation.

Funds to subsidize selected smaller irrigation projects, with technical guidance when needed, will be distributed through the village development programme ; for these, the farmers will supply the labour and part of the cost. Major irrigation projects will be in the public sector. Experience in India indicates that Government can develop such projects more rapidly than private constructors and, being able to balance losses on some with profits on others, can select projects on the basis of need and still realize a substantial financial return.

It is intended, under the Five-Year Plan, to recondition two of the larger existing irrigation works (Jagdishpur and Judha), capable of watering about 9,000 acres of paddy ; to complete seven projects now under way with Indian and American aid, which will when finished irrigate about 45,000 acres ; and to undertake additional projects commanding some 200,000 acres of arable land. The total estimated cost, over the five year period, is nearly 2 crores (20 million) rupees.

Experience in the neighbouring states of India indicates that the value of extra annual produce due to the introduction of irrigation is generally equal to the total cost of the project. This is an extraordinarily high rate of productive return on developmental investment. Yet it is expected that the return, in Nepal, from irrigation projects planned for the next five years will be comparable. This means that the net increase in annual agricultural production resulting from the 2.5 crore rupees irrigation programme may be as much as 2.5 million maunds (100,000 tons) which, at Rs. 10 per maund, would come to a total of about Rs. 2.5 crores. In addition, net revenues to the Government, calculated at a water cess rate of Rs. 8 per bigha (1 bigha 1.67 acres) on government irrigation land, would rise to a level of more than a million rupees a year.

CHAPTER 10

FORESTRY

The forest resources of Nepal offer the country's most promising base for a rapid strengthening of the national economy. Potential domestic and export markets justify prompt measures for the early and integrated utilisation of these resources. This must be done, however, in accordance with sound forest management principles that will result in sustained yield capacity of the forests—not in destructive cutting, site deterioration, erosion, floods, and the depletion of wild life and recreational values.

There are numerous obstacles to such a forestry programme which, to be dealt with, must first be frankly recognized. There is as yet lack of a clearly defined forest policy and adequate forest laws. A well-organized, efficient forest service, dedicated to the wise use of forest resources in the national interest, has not yet been built up. Funds, to date, have been insufficient to employ needed personnel at adequate salaries, and to protect, develop and manage the forests on a sustained yield basis. To lack of research and training facilities, lack of transport and communications needed for efficient forest administration, and lack of modern equipment and techniques for efficient forest utilization must be added lack of public consciousness of the social and economic importance of the forests and the disastrous effects of past policies and practices.

An early objective, under the Five-Year Plan, is the formulation and enactment of a National Forest Law that will clearly define policy in the management and regulation of both public and private forest land, and provide for an effective Forest Service to administer the Law. The authority of the Forest Service should cover all phases of timber production and the management of forest lands, including the designation of all trees to be harvested, the determination of stumpage prices, sufficient control of logging and other timber use and harvesting to prevent unnecessary damage to forest or forest lands, and all aspects of forest research. The law will need to take into account the requirements of individual families living in or adjacent to forests; the management and control, in the best public interest, of reserved forests, protected forests, Birta forest lands and grazing lands; and the terms and conditions under which the cutting and hauling of trees will be permitted. The law will be designed to facilitate the domestic processing of forest pro-

ducts for both local and export markets, thus encouraging the development of a wide range of secondary industries.

A first activity of the strengthened forestry service will be to prepare an inventory of the country's forest resources—determining types, quantity, quality, density and accessibility of forest growth, as well as information on prevalent practices, and current and prospective requirement. As rapidly as possible, the forestry service will be staffed with personnel competent to carry out the Government's protective and regulatory policies.

The forestry service will co-operate closely with other governmental agencies concerned with the extraction, transport and industrial utilization of forest products—including the Ministries of Industry and Commerce, Transport and Communications, and Planning and Development. For the benefits to the country that can be realised from a balanced policy of sustained protection and effective, integrated utilization of forest resources are incalculable. Manufactures from forest products are discussed under Industry.

CHAPTER 11

TRANSPORTATION

Nepal, a land-locked country between India and Tibet, with an area of about 54,000 square miles, is about 550 miles in length East to West, and its width varies from 125 miles to 150 miles North to South. The Northern boundary is the Himalayan chain of mountains, the highest in the world. The rivers arising in these mountains generally run north-south cutting the country into many deep valleys. On the Southern border is the Terai, a rich alluvial plain 20 to 30 miles wide. This is suitable for agricultural production and has a very heavy forest growth. The climate of Nepal ranges from arctic in the high mountains to temperate in the valleys and tropical in the Terai.

The deep valleys and the extremes of elevation and climate make communication very difficult, and there is probably no country in the world which has so few means of intercourse between its various areas. People living in small and isolated rural communities are cut off from each other. Each isolated region tends to follow a pattern of subsistence economy of the most primitive and rudimentary type, the lack of communication handicapping all prospects of development. In some localities there are soils and climate suitable for raising cash crops of comparatively high value. In others there are mineral deposits. And some places are very suitable for the development of cheap hydro-electric power. But the lack of a transportation system is the great barrier to putting these natural resources to use for the benefit of all. Without transport, administration is costly and the Government cannot fulfil effectively its role of promoting the people's welfare; the existing exploitation of resources is inefficient and potential resources cannot be developed. For instance, the forest area of Nepal is about four times that of the adjoining State of Uttar Pradesh in India but, due partly to lack of transport, the income is much less even though the natural quality of the forest is better. In these circumstances not only do trade and production languish, but there prevails a general lack of economic security.

A. Highways.

There is at present a total of 310 miles of road in Nepal. Some of this has an all-weather metalled surface; some is usable in fair weather only; there is a small mileage of asphalt surfaced

road. It is thought that to effectively tie together all the communities and areas of Nepal, a total of 4,000 miles of road should be built in the next twenty years. A master plan for such construction has been divided into four tentative five year projects. In the First Five-Year Plan, 300 miles of metalled road, 300 miles of fair weather road, and 300 miles of nine-foot jeepable track will be constructed. During each subsequent Five-Year Plan, the fair weather road and track constructed during the preceding years will be converted to metalled road, and a new 600 miles of fair weather road and 600 miles of track will be constructed.

It is difficult to assign priorities for road construction in the first five years due to lack of statistics on trade and travel. Use will be made of the limited data available from the collection of customs duties, and surveys will be conducted before the priorities are finalised. As most of the trade routes are from Nepal to India, the alignments selected will be mostly North-South. During the first five years further surveys will be made and data accumulated upon which will be based the priority for the roads to be constructed during the following years including those to India and the Tibet region of China.

A policy of progressive improvement will be followed. The first necessity is the rapid construction of a system of moderately priced roads which will give the country year-round service for its most pressing business needs. After this is accomplished, the standard of the road will be raised to the highest level that the community can afford.

While it is anticipated that there will be considerable foreign assistance in road construction during the first five years, there will also be internal costs for construction and, especially for continuous maintenance after the roads are built. To meet these costs and to augment the Government's financial resources for continuing economic development, various types of taxation will be needed including fuel taxes, registration levies and related fees, taxes on vehicles, taxation on land the value of which is increased by the road construction, and "excess condemnation"—a method whereby a tract of land lying on each side of a proposed road is acquired in excess of the right of way requirements and then resold after completion of the project at an enhanced value as a result of the new construction. A principle underlying such taxation is that the beneficiaries from the improved transportation should share equitably in meeting the burden.

In the first year the main emphasis will be on the collection of the technical staffs for survey work, fixation of the alignments, preparation of the projects, completion of the reconnaissances

of the hill alignments, completion of the detailed survey of the alignments in the plain regions, the cutting of tracks in the hills, from two to six feet in width, to make possible the carrying out of detailed surveys, and the training of personnel for construction work. In the second year, the work of survey and alignment will move forward and 12 feet roads will be constructed on those alignments whose survey has been completed in the first year. From the third year on, the work will be in full swing.

Arrangements will be made for the recruitment of local labour, as required, for whom camps will be set up with sanitary facilities, pure drinking water, consumer stores, facilities for recreation and programmes of entertainment and social education. The cost of this will not be large but the effect on the morale and the well-being of the labour will be important.

A major problem, however, is our shortage of technical and supervisory personnel for survey and construction work. In addition to highly trained engineers we shall need, in substantial numbers, assistant engineers, overseers, draughtsmen, surveyors, computers, accountants and clerical staffs. A table of personnel requirements has been drawn up for the first year of the Plan, with detailed estimates for the next four years. In the initial phases it will be necessary to place heavy reliance upon trained personnel from other countries, especially for the higher technical posts. Arrangements are being negotiated for the loan of such personnel. Meanwhile, detailed plans are being laid for the training of our own technicians in requisite numbers. A selected number will be sent to technical institutions abroad for intensive study; upon their return they will be promptly attached to working parties for practical experience preparatory to assuming active executive and engineering responsibilities. Facilities for the training in Nepal of junior technical personnel including overseers, draughtsmen, surveyors, computers, accountants and clerical staffs will be expanded during the first years in order to meet as rapidly as possible the growing requirements for such personnel. In addition, young men with rudimentary knowledge will be attached to survey and construction parties for practical in-service training.

B. Ropeways.

The means of transportation into Kathmandu Valley from the South are : (1) by air, (2) by the Tribhuvana Raj Path, a motor road in the final stages of construction, (3) by bridle path, (4) by ropeway.

The ropeway is of the greatest economic importance as it is by far the cheapest means of bringing foodstuffs and essential goods into Kathmandu Valley with its population of over 600,000.

In 1927 when the ropeway was constructed from Dhursing to Matatirth, a distance of 14 miles, it had a capacity of 8 tons per hour. Now, after nearly thirty years of operation, due to wear and tear and the non-replacement of moving parts, the capacity has been reduced to 5 tons or less per hour. A year ago a four mile extension from Matatirth to Bhansar was completed. This has not been brought into operation because its carriers and spare parts were cannibalised to keep the original ropeway in operation. The ropeway has served the Valley very well indeed, and even now, working 12 hours per day, 60 tons of goods are brought in daily. However, it needs either a major overhaul or a replacement by new construction. The former would cost nearly Rs. 7 lakhs. In addition, because of landslides and severe erosion which has endangered the towers, four miles of the ropeway would have to be realigned at an additional cost of Rs. 8 lakhs. It is believed that new construction would be more economical in the end, and would serve better the needs of the Valley. A total of 225 tons of goods are now imported into the Valley daily by all methods. There has been a normal yearly increase of about 10 tons per day. With new economic development the rate of increase may be substantially accelerated. Considering this, it is proposed to construct an entirely new ropeway with a capacity of 20 tons per hour. This would greatly decrease the cost of transporting goods to and from Kathmandu Valley.

The bulk of the goods now coming from India are transferred from the Indian meter-gauge railroad at Raxaul to the Nepal narrow gauge railroad, thence shipped to Amlekhgang from where they are transferred again to trucks and brought by road to Dhursing, the terminus of the ropeway. Under the section on Railroads, below, it is proposed to change the present narrow gauge railway to meter gauge and to extend it to Hitaura. When this is assured, the new 20 tons per hour ropeway should be extended to Hitaura so that goods could be brought to Kathmandu from India with only one transfer, from railway to ropeway, at Hitaura. Alternatively, if necessary, the Kathmandu Hitaura ropeway might be extended to Amlekhganj.

When replaced, the existing ropeway can be salvaged, and, in smaller sections, can be used in several places in Nepal that greatly need this means of transportation. The replacement of the present line will thus not only be of advantage to Kathmandu Valley, but also to other places where sections of this line will be used. As power will be made available at many places during the next five years, there should be no difficulty in working these ropeways after they have been installed.

Since ropeways are particularly well adapted for transport in rugged terrain, extensive surveys are planned looking to future developments in this form of transportation in Nepal.

C. Railroads.

The Nepal Government Railway, a 2 foot 6 inches narrow gauge line, was constructed in 1927. This line is 29 miles long and runs from Raxaul on the Indian border to Amlekhganj near the foothills.

The condition of the railway is reasonably good when the lack of maintenance and materials is taken into consideration. The goods traffic is steadily increasing and it is not anticipated that the railroad can take care of continuing enlargement of traffic without improvement. An Indian Railway officer's delegation inspected the above railway in 1952 and listed five courses of possible action : (1) Rehabilitation of the present line at minimum expense, estimated cost Rs. 17 lakhs. (2) Rehabilitation as a permanent measure, estimated cost, 41.5 lakhs. (3) Conversion of the present line from narrow gauge to meter gauge, estimated cost at 3.25 lakhs per mile, Rs. 105 lakhs excluding rolling stock, workshop, equipment. (4) Extension of the narrow gauge line to Hitaura after rehabilitating the existing line, estimated cost, including additional rolling stock, Rs. 191.5 lakhs. (5) Conversion of the existing narrow gauge line, then extending the meter gauge line to Hitaura ; estimated cost (a) conversion of present line to meter gauge, Rs. 105 lakhs (as in 3 above), and (b) construction of 25 miles extension to Hitaura at 9 lakhs per mile, Rs. 225 lakhs—total 330 lakhs.

The fifth alternative was recommended, for many reasons ; to eliminate transshipment at Raxaul ; to provide increased carrying capacity to meet increased demand ; to provide through train service to meter gauge connections in India ; to export raw materials, forest products, ballast, lime and other products to India at cheaper rates to competitive markets ; to standardize maintenance and, by uniformity with nearby Indian railways, to encourage the development of our railway, lessen transport costs, facilitate training of personnel, and expedite procurement of equipment and spare parts.

In addition, the railhead at Hitaura would link up with the proposed extended ropeway to Kathmandu, which would greatly facilitate the shipment of goods from India to Kathmandu as well as greatly reduce the shipping costs. Instead of having the three transshipment points at Raxaul, Amlekhganj and Dhursing, we shall have but one at Hitaura.

At Hitaura the line would more easily serve also the Rapti Valley which is under extensive development, and would become an important junction for the export from Nepal of forest products, cement and other goods.

Under the Five-Year Plan it is proposed that surveys of the route be made the first year, with actual construction to start at the beginning of the second year.

Most of the senior officers of the present railway organization will have retired by the time the new railway is completed. It is, therefore, essential that suitable candidates for the different jobs be selected as soon as possible and sent to India for training so that the new meter gauge system can continue to be run efficiently by our own men.

D. Aerodromes and Airways :

The following table of landings for all existing airfields in Nepal during the years 1951-55 is indicative of the increasing volume of Air traffic.

<i>Year</i>	<i>Number of landings</i>
1951	200
1952	900
1953	2100
1954	4200
1955	4800

The main objectives of the Five-Year Plan for civil aviation are : (1) The development of an efficiently operating Air transport system to meet the country's minimum needs through improvements in the existing airfields and their facilities ; (2) addition of a limited number of fair weather airfields ; (3) suitable co-ordination of air transport with other forms of transportation envisaged under the Five-Year Plan ; and (4) preparation for a systematic transition of Nepalese airlines under an agreed pattern to national ownership and control.

The tentative order of priority for improving the existing airstrips is as follows :

1. *Simra* : Simra is the nearest feeding and refueling point to Kathmandu and has the greatest amount of traffic. The field is very soft and is unusable during the greater part of the monsoon.
2. *Bhairawa* : The runway is very soft and should be metalled to meet the increasing traffic demand between Bhairawa and Pokhara.
3. *Pokhara* : Pokhara is the best of the fair weather strips, but is undulating. It can wait for three years for development into an all weather runway.
4. *Biratnagar* : This has the least traffic at present, but when new airstrips at Janakpur and Rajbiraj are completed, Biratnagar will assume more importance.

During the first year of the Five-Year Plan, traffic and site surveys will be carried out to determine the desirability of new air-strips.

A proposal prepared by the Committee for the Organization of Air Nepal is now receiving Governmental consideration. Under this proposal a temporary construction agency would be established, staffed as far as possible with Nepalese personnel, for the construction of aerodromes, runways, airstrips and buildings. Planes would be hired on a charter basis from the Indian Airlines Corporation. The responsibility of operating and maintaining the aircraft would be that of Indian Airlines Corporation until Nepalese personnel could be trained. But the administration and commercial organization would be controlled and staffed by the Nepal Government. Such a development, it is believed, would yield economic benefits from internal and external trade and travel, as well as benefits from the defence and administrative point of view.

CHAPTER 12

COMMUNICATIONS

A. Postal Service.

Postal service in Nepal began in 1875 when runners, soon replaced by lancers, carried Government documents bearing one-rupee stamps between Kathmandu and the districts of Gorkha, Pokhara and Palpa. Four years later this facility was opened to the public and quickly became popular. In 1881 a few post offices were opened and stamps issued in 1, 2, and 4 annas denominations, thus setting a pattern which, in an extended form, has continued until today. A year later, 47 post offices were opened across the country under a general post office in the Capital known as the "Hulak Goswara"; the latter was supplanted in 1951 by the office of the Director of Posts. There are now nearly a hundred post offices in Nepal and seven superintending offices or postal head offices; about two dozen additional post offices are awaiting Government recognition which may be granted this year. Postage stamp issues since 1881 have occurred in 1886, 1907, 1929, 1935, 1940, 1946, 1949, 1954, and 1956 (Coronation issue). The postal communications of the country have had and continue to have a dual pattern. Internal communications are handled by our general post office but, since Nepal has not yet joined the Universal Postal Union, mails entering or leaving Nepal are routed through the Indian Embassy post office in Kathmandu.

It is the aim of the Government, under the Five-Year Plan, to extend and improve the efficiency of the present postal system within the country and to acquire promptly membership in the Universal Postal Union (UPU). Although, as at times in the past, postal service to remote sections has been at a financial loss due to transport costs and low volume of mail, an effort will be made to leave no community unserved and to develop a service which can compare favourably with that of advanced countries. At present there is only one post office, on the average, to every 85,000 people, the majority of whom live in scattered villages. The tentative target for the Plan period is 100 additional post offices, raising the total to about 200, and to place each in a *pukka* communications building which will also house, where possible, branch wireless and telephone services. The hierarchy of the postal system, from the top, will be General Post Office, post offices, branch post offices, and *chowkis*, the

last named being local distribution points (not regular offices) served by runners; several hundred such points may be arranged for in local buildings.

The efficient operation of this expanded postal system would require, ideally, more than a tripling of the present postal staff of 1,631. Detailed staffing schedules are being drawn up, along with training plans phased to meet the expanding requirements. Some of the higher level personnel will probably receive periods of training in India under the Colombo Plan; the balance will be trained locally.

B. Wireless Communications.

Since the introduction of wireless communications about six years ago, thirty well distributed stations have been established. All except two, in Kathmandu and Biratnagar, are powered by petrol engine generators. All stations contact Kathmandu daily according to a fixed schedule. Aside from Governmental use, the system is made available to the public for both messages and conversations and has become very popular. There is considerable demand for extension of the service.

Since wireless affords the only means of rapid communication between different parts of the country, its extension and improvement are of considerable importance to the Government. With the acceleration of action programmes in all parts of the country, under the Five-Year Plan, and with a concomitant growth expected in general business and commercial activities, a strengthening of the wireless network, with better equipment and load-carrying capacity and with wider coverage of the country, becomes increasingly urgent.

But the task is not easy. Old war-type sets are in use in most of the stations. The transport of fuel (petrol) to these stations is costly and uncertain. There is a lack of stand-by sets and a shortage of spare parts for replacements. The different zones do not have well equipped repairing centres and the system as a whole lacks trained mechanics, experienced engineers and other skilled personnel. These problems will have to be met as the Government undertakes, during the next five years, to develop a wireless communication network that will help to unify the nation and meet its more pressing country-wide administrative, economic and social needs.

Under the Five-Year Plan, equipment, maintenance facilities, personnel training and organizational improvement will be synchronised, seeking at each stage the best combination of efficiency and economy in operations. With anticipated assistance from the aid programmes, the present obsolete sets will be replaced by more modern sets, heavier in the main centres

and lighter for the more isolated posts. The latter, because of the cost and difficulty of petrol transport will be chiefly hand or steam generated. It is expected that the number of sending and receiving stations, now thirty, will be more than doubled during the Plan period. Six repair centres, with suitable testing equipment, are planned for the next five years, with one main centre in the East and one in the West. The personnel selected for the main engineering and technical posts will be sent to India and elsewhere for advanced training in wireless communications (one is now receiving such training in the U.S.) while junior technical personnel will be trained in our own engineering school. Expert aid from abroad will be required until our top staff have been trained. With central direction from Kathmandu, the administration of the wireless system will be conducted through regional centres. Revised rules and regulations and a code for the Wireless Department will be formulated very early in the Plan period.

C. Telephone Communications.

Telephone service initiated on a small scale in Kathmandu about forty years ago was for the use of the ruling authorities only. During the past five years, an effort has been made to extend this facility to the citizens of the capital city. The number of lines is insufficient, however, and there is now a growing demand for the establishment of telephone exchanges in other cities, especially Birganj and Biratnagar, and for improvements and expansion of trunk lines which now total some 600 miles in length. There is also need for a gradual replacement of obsolescent equipment. Automatic exchanges required the least maintenance and are the most efficient in operation. The additional exchanges to be procured during the plan period will be of the automatic type.

New construction during the period of the Five-Year Plan, as well as improvements in existing facilities, will be phased in accordance with priority needs and availabilities of equipment and trained personnel. A tentative schedule for the full period has been developed. New automatic exchanges (100 lines each) are planned for Biratnagar and Birgunj and also (50 lines each) for Janakpur and Rajbiraj. In Kathmandu, 300 lines will be added to the present C.B. exchange and a new 100-line automatic exchange installed in the secretariat; the latter will be an important aid to more efficient administration. New telephone offices are planned for Bhairawa, Jaynagar, Nepalganj, and Rangeli (Morang). Existing trunk lines will be transposed where necessary and improved with repeater mechanisms, towers for river crossings, etc. A duplicate line will be constructed from Kathmandu to Birganj (as well as a telegraph line), another from Kathmandu to Biratnagar, Dharan and Dhankuta; a new line

from Bhairawa to Tawalihawa ; and another new line from Bhairawa to Parasi.

The personnel required to carry out the new construction and to man the expanded system will be trained according to a plan adjusted to the anticipated rate of demand. Junior technicians will be trained as far as possible in Kathmandu, while engineers and senior technicians will be trained abroad in the best modern techniques and practices.

CHAPTER 13

POWER

The hydro-electric potential of Nepal, in physical terms, is virtually unlimited. River systems stemming from the high Himalayas and flowing southward to the plains of India provide abundant water supply, often with rapid rates of fall, for the generation of electric power in units of all sizes. To date, however, the total installed capacity of the country, concentrated in Kathmandu and Biratnagar, amounts to only a few hundred kilowatts.

The obstacles to any dramatic exploitation of this vast resource during the next few years, however, should be recognized. The best sites for power dams are often in remote localities to which transport facilities are practically non-existent. The initial investment required for sizeable projects is heavy. The potential market for electricity in most parts of the country is limited by the low purchasing power of the people. Before power generating projects can be undertaken there is need for an accumulation of meteorological and hydrological data, for personnel competent to conduct thorough pre-investment engineering and economic surveys, for adequate financing and a well-staffed organization to plan and carry out construction, and for an agency—public or private—to handle distribution of the power generated. These, to a large extent, are lacking in Nepal. We are not in a position now to launch any massive hydro-electric schemes.

What we undertake during the next few years must be adjusted to realistically assessed markets and costs, and to actual availabilities (directly or through aid programmes) in personnel, finance, transport and organization. Generally speaking, we shall need to follow a policy of generating power in relatively small-scale installations when and where required rather than to attempt "grid systems" involving high initial investment including wide power line distribution, although present construction may fit into such systems years hence. Our internal markets for electricity in the near future are likely to be valley and plain communities and hill towns where not-too-distant power-generating units can be built with modest capital to service small-scale and medium industries and to meet effective household and community demands. Rural electrification where feasible, may stimulate an expansion in small-scale and even cottage industries,

to the benefit of living standards in the area.

Subject to change after more exhaustive surveys and estimates, the following projects are now favoured for inclusion in the Five-Year Plan :

<i>Name of Project</i>	<i>Years to complete</i>	<i>Total K.W.</i>	<i>Transmission mileage</i>	<i>Estimated cost (in lakhs)</i>	<i>Estimated Annual Revenue (in lakhs)</i>
<i>New Construction :</i>					
Kosi	4	10,000	Primary 150 secondary 600	100	40
Trisuli	4	10,000	150	225	40
or Bagmati (Makawanpur)	3	5,000	70	110	20
Tharo Khola (Mar-khu)	2	500	25	15	2
Panauti	2	500	35	20	2
Seti (Pokhara)	3	1,000 (1st stage)	35	40	8
Tinau (Tutwal area)	2	1,000 (1st stage)	40	35	4
		18,000 to 23,000		320 to 435	76 to 96

Rehabilitation :

Sundarijal and Pharping (in Kathmandu area)

2 1,350 8 and 7 17

Cost of the Kosi Project, to be borne separately by the Indian Government, is not shown in the total estimated costs under the Five-Year Plan.

Completion of the above programme within the Plan Period would add around 20,000 kilowatts to the country's total installed capacity, about half of this amount being in Eastern Nepal, a third in Kathmandu Valley, and the balance distributed as among Rapti Valley, Pokhara Valley, perhaps the Birganj area, and the Bahairawa-Palpa area.

The Kosi Project, in the Rajbiraj Morang area, is intended to provide power to parts of both eastern Nepal and northern India, and is associated with irrigation and flood control measures of interest to both countries. It is being conducted by India under an agreement by which Nepal is to receive 10,000 k.w. at the power houses, free of cost, for use within Nepal. Aside from Biratnagar, which is expected to consume about 2,500 k.w., the

market potentiality for electricity in eastern Nepal has not yet been evaluated, but it is presumed that both hill and Terai districts east of Kathmandu would avail themselves of this electric power.

The Trisuli Project, for which survey has been completed, would be near Trisuli Bazar in District West No. 1. It would provide power to Kathmandu and Rapti Valleys and, if the transmission line is extended, to the Birganj area. The scheme would involve a diversion of the Trisuli River (minimum flow, 10,000 cusecs) and exploitation of a consequent drop of 150 feet. The Bagmati Project, now being surveyed, would be about five miles from Makawanpur Garhi, suitably situated to supply the same three areas as would the Trisuli Project. Somewhat smaller but more accessible than the Trisuli Project, it would use a fall of about 400 feet in a 3-mile stretch of the Bagmati River which has a minimum flow of about 200 cusecs.

The Tharo Project, about 10 miles from Kathmandu along the trail to Bhimphedi, has had a preliminary survey. It would utilize the flow of the Tharo Khola (minimum flow of 7.5 cusecs) through a fall of 700 feet between Mahavir and Kharikoboat. The plant could easily be connected with the Pharping power house by using an existing transmission line from the latter to the Ropeway at a point near the Tharo Project.

The Seti Project would be very near the town of Pokhara where the Seti River cuts through a gorge about 250 feet deep and not more than 30 feet wide, with a minimum flow of about 200 cubic feet per second. The ultimate capacity of the project would be about 4,000 k.w. but the construction will be phased since the initial demand at Pokhara is expected to be rather limited.

The Tinau Project, in the vicinity of Butwal which is on the way from the Nautunuwa railhead to Palpa, would meet the demand for electricity from people of the Bhairwa-Palpa area. The sources used could ultimately be tapped for 3,000 k.w. or more.

Detailed surveys covering all of the above projects will be completed as promptly as possible. Technicians required for each project would include, with minor variations, an executive engineer, 3 assistant engineers, 12 supervisors or overseers, a computer, a draftsman, and a stenographer. Until our own specialists can be trained in sufficient number, we shall use with appreciation technical skills and guidance provided through the aid programmes.

During the Plan period, selected young men will be sent abroad, on a pre-arranged schedule, for technical training at all requisite levels in order that, as soon as practicable, they may

come back for short periods of work with the foreign experts, then be in a position to take over responsibility for efficient operation and maintenance of power installation and, in due course, for the direction of new construction projects.

It is to be noted that development in extra small units will be ideal for community projects. The cost of power units of 30 to 40 k.w. would average about 50,000 rupees ; distribution costs would be low and the local people would have the pride of owning these small power units. The cost of a hundred such units would be only 50 lakhs rupees and power could be generated locally at a hundred different places, and the benefits of electricity could be spread to a considerable part of the population over a wide area. Due to the high cost of transporting kerosene oil and a lack of vegetable oil, people in the hills generally remain in darkness after sunset. Electricity would be a boon which they would immediately appreciate. The one hundred plants, more or less, could be constructed quickly whereas a big plant requires several years. For all of these reasons, serious consideration will be given to the making of adjustments in the above schedule for larger projects in order that, within the total budget approved, at least a substantial number of the 30 to 40 k.w. power units may be set up in well-distributed rural districts.

Consideration will be given to the recommendation that a Special Power Board should be established under the terms of the Development Board Act, to ensure coordinated thinking and decisions on policy matters and to facilitate maximum economy and efficiency in operations. Problems on which the Board would provide high-level guidance would include the possibility of increased emphasis upon small rural power units, the role of private enterprise in the electricity field—especially in the handling of distribution, the possibilities (which may be considerable) of development of power for export, and legislation required in order to put the development and use of electric power in Nepal on the basis that will best serve the immediate and longer-range interests of the entire nation.

CHAPTER 14

INDUSTRY

Until recent years Nepalese communities depended very largely, for fabricated goods, upon the products of cottage industries. Only in the last twenty years have we had experience with small and medium-sized factories using non-human sources of power. Successful operation of some of the earlier enterprises was followed by a period of opportunistic expansion during which many ill-considered ventures were launched without proper preparation, financing, management, and knowledge of industrial processes and marketing potentialities. But these enterprises were also handicapped by a lack of environmental conditions conducive to normal industrial growth—lack of transport, of readily accessible markets, of scientific and technical education, of commercial statistics and publications, of banking and credit institutions, of accumulated industrial experience, of protective and regulatory legislation. It is not wholly surprising therefore that Nepal's industrial experience has been characterized by difficulties and ineptitudes, with numerous failures and many existing industries now in difficulties..

In considering what needs to be done to put industrial growth on a sound footing, it is well to note at the outset that many factors determine the capacity of manufacturing enterprises—large or small—to produce efficiently and to survive in a competitive world. These factors include managerial competence, entrepreneurial initiative, technology, labour skills, co-operative labour management relations, availability and quality of raw materials, auxiliary services such as transport and power, banking and credit and insurance facilities, business research institutions, educational facilities for the training of specialized personnel, and Governmental policies or activities pertaining to taxation, tariffs, currency management, or guidance of investment.

Because industrial growth depends upon many interrelated factors, the earliest phases of industrial development are nearly always the most difficult. It is necessary to bear in mind constantly, and adjust to both internal and environmental influences. Once well begun, however, the process of industrialization tends gradually to gain momentum through the interaction of dynamic influences. Each significant improvement in productivity and incomes, for example, may exert a favourable influence upon internal markets and upon the volume of savings available for

future investment. And the successful launching of some industries tends to improve the environment for others in terms of public confidence, investment, cumulative skills, and availability of auxiliary services. It is most important, however, that the industries selected for early encouragement should be successful.

In determining which industries will receive major attention under the Five-Year Plan, priorities will be based upon assessment of which projects are best suited to a balancing of the economy, are found to be feasible, and can be implemented most readily with available means—raw materials, labour force, and financial resources. Specific objectives and targets will be set only after surveys and research provide the data essential for making such determinations in regard to specific industrial plants. General objectives, to be borne in mind, will include a revival and expansion of cottage industries selected on the basis of their quality and capacity to survive; encouragement to private savings and investment in productive enterprises, and of foreign capital under appropriate safeguards, assistance to existing industries requiring help when there is a basis for reasonable confidence in the future soundness of the enterprise; intensification of surveys and research essential to wise planning; fostering technological training, technological advances in production, and a discriminating use of foreign technical aid; a broadening of the channels of communication and understanding between Government and industry; study and recommendations on needed legislation; and the maintenance of close working relations among all departments of the Government concerned directly or indirectly with problems relating to industrial development.

Determination as to which industries will fall into the public and which into the private sector will be based upon practical rather than theoretical considerations, taking into account the degree of public interest involved, the availability of investment funds, available managerial talent, and similar factors, it is expected that transport, communications, hydroelectric power, and large irrigation projects will be governmentally owned and operated. Forest products may be handled partly by State owned corporations. Industries in the private sector will be accorded treatment and facilities no less favourable than those given to public enterprises. Subject to thoroughgoing study and analysis before decisions are reached, priority consideration will be given to industries for the production of cement, forest products, sugar, textiles, cigarettes, iron. For cottage industries, training-cum-production centres will be created in different parts of the country, at least one each year—to develop and improve designs, quality production, and skills. Small loans will be made to trainees to start their own operations on an individual or co-operative basis, and they will be sold tools and machines on ins-

talment payment terms. They will be helped in procuring raw materials economically and in marketing their finished products.

Preliminary plans have been drawn up for the establishment of an Industrial Research Bureau where governmental representatives, in co-operation with selected industries and with the help of foreign experts, can carry forward intensively such key activities as research, training, market analysis, industrial analysis, and conduct of pilot projects.

The Bureau will offer specifically, according to present planning, a laboratory research service, analysing raw materials and consumer goods ; and industrial library service, making available industrial information and statistical data ; a survey service for investigating industrial raw materials, gathering market data, conducting credit investigations, making factory surveys ; and information service for the publication and distribution of industrial bulletins ; and a consulting and training service to help industrialists with marketing and merchandising, management, investment, costs, labour relations, production, and industrial engineering. The main purpose of the Bureau will be to collect and analyze information and then pass it on to Government and to private firms for necessary action.

Throughout the industrial programme, strong emphasis will be given to the training of technical and other personnel in accordance with estimated requirements for each year of the Five-Year Plan. We require engineers, technologists, scientists, accountants, economists and others. Each should be given an opportunity to learn the elements of organization and management plus general education which not only broadens their knowledge but also sharpens their analytical faculties. Within this corps may be found the managerial talent that we shall require in the future.

A Government-sponsored financing corporation is also planned for the making of industrial grants or loans, in suitable amounts and with safeguards against wastage, to industries requiring some transitional financial assistance until they can become wholly self-supporting. Recommendations will be made for revisions in tax and tariff legislation, and for improvements in tax administration, in order to afford greater incentives to industrial enterprises and to free them as far as possible from harassing uncertainties.

Foreign capital will be welcomed, especially in connection with large-scale industries. The conditions laid down for the participation of foreign capital in our development will safeguard the independence and integrity of the Nepalese economy on the one hand and, on the other, will give adequate assurance to investors that their legitimate interests including a fair return

upon their investments will be protected against any arbitrary governmental actions. And it is planned that a Royal Commission will be recommended to frame revisions in the Company Act and to develop suitable modern labour legislation.

CHAPTER 15

MINERALS AND MINING

The importance of minerals for the production of a host of tools, implements, utensils and other producers' and consumers' goods is generally understood as is the significance of such production in meeting problems of unemployment, transport, communications, and diversification of the economy. Fragmentary historical evidence indicates the past existence in Nepal of mining of copper, iron and other minerals. The decline and extinction of such enterprises as existed is attributed to transport problem and to ruthless treatment of workers which caused them to lose interest. That Nepalese people can be interested in such work today, however, and that they can succeed at it is indicated by numbers who have taken employment and done very well in mining enterprises of nearby countries.

In much popular thinking the vast mountains of Nepal are believed to contain extensive mineral resources. But in the aeons of geological time the present Himalayas are believed to be of relatively late origin and the gradual upheavals that brought about their formation on the earth's crust may have broken up or buried deep some previously existing deposits. The full facts are not known and cannot be known until extensive exploratory and investigative work has been done. There are several stages, or aspects in the making of determinations as to the size and quality of mineral deposits. One is geological reconnaissance to determine the history and character of the major geological formations of the area. This information may be useful in indicating where the next stage can best be initiated—the stage of exploring for actual mineral deposits of potential commercial value. Such exploration may be conducted by a combination of methods including detailed geological studies, the analysis of rocks in the vicinity, test drillings, etc. After the presence of a mineral deposit has been confirmed, it is important to determine its probable extent and its relative equality and purity. This may be done by further drillings and by the laboratory analysis of samples brought in for scientific testing.

In Nepal we have entered upon the preliminary stages of such work, with help from a few experts of the United Nations Technical Assistance Administration, the Geological Survey of India, and the United States Operations Mission. A first basic geological reconnaissance survey and

mapping of the mountain formations of Nepal, which has been going on for several years, is now nearing completion. Several field geologists have been at work more recently to ascertain the existence and extent of certain possible mineralized zones. Simple laboratory facilities for chemical and metallurgical analysis of samples have been initiated. What has been done so far, however, represents only the barest beginning of what is needed. Continuation of such work over a period of many years is needed and must be followed up by practical searches for mineral deposits of economic value. For this it is desirable to have both systematic searches employing modern techniques of mineral exploration and country-wide searches following prospector methods.

Some deposits have been identified and investigations of their extent and quality have been, or soon will be, started. It now appears to be well established that a limestone deposit at Bhainse is large and of satisfactory quality for the manufacture of cement. Preliminary study has indicated that an iron deposit at Phulchowki-danda is sizable; deep diamond drillings are now projected to ascertain the actual extent, formation and quality. Nangre copper and Bhorle nickel are to be further investigated. A mica deposit north of Kathmandu appears to be sufficient to warrant commercial mining, while lignite deposits also near Kathmandu may prove to be suitable for firing brick kilns and for fuel in other uses not requiring higher-grade coal. Deposits of the latter have not been confirmed in any significant quantity in accessible areas; coal is so important for many uses including foundry and metallurgical work that priority will be given to the exploration of any suspected deposits. Other minerals known to exist in Nepal but without any knowledge as to whether the amounts are commercially promising are cobalt, lead and zinc.

After deposits are established, in quantity and quality to justify mining operations, a number of obstacles or problems must be assessed or dealt with. The possibility of economic transportations to and from the deposit must be determined. Answers must be found as to the availability of coal, power or other auxiliary services or, alternatively, as to the economic soundness of mining and smelting operations without such resources and facilities. Technically competent personnel must be available to conduct the mining operations and to merchandise the product. And before the work can commence there must be sufficient investment funds and capital equipment from either private or public sources to see the project through to the point where it can pay its own way.

Each of these questions will be the subject of study and

action under the Five-Year Plan. Co-ordination will be maintained between the Bureau of Mining and other departments including those of Transport, Communications, Industry, Agriculture, Village Development, Education, Power and, of course, Planning and Development. The work of foreign experts made available through aid programmes will be more closely integrated through consultations initiated by the Bureau of Mining; this will forestall duplication and make for more effective use of personnel and equipment as well as a better centralization and availability of maps, records and equipment. It will also ensure more thorough, considered planning of further operations. Special emphasis will be placed upon the training, at suitable places abroad, of mining engineers and other higher-grade technical personnel, support will be given to the training of lower-level technicians within Nepal. Efforts will be made to enlist the interest of private capital in promising ventures capable of development through private enterprise; encouragement may be given through public loan funds. In some cases direct governmental participation in ownership and operation may be indicated, in which event public corporations with some private participation may be organized.

To deal with major policy decisions in relation to minerals and mining, to help in the establishment of a mining code, and to advise on the formulation of needed regulatory legislation, the Bureau of Mines will avail itself of expert counsel within the Government and among the aid organizations. A special board will be set up, according to present plans, to make loans to prospectors and mining ventures, conducted under technical supervision of the Bureau of Mines. Within the Bureau will be established services of geology, ore dressing, minerals analysis and metallurgy. The detailed phasing of actual mining operations must, inevitably at this stage, be contingent upon the proven findings of continuing field and laboratory investigations.

CHAPTER 16

COMMERCE AND TOURISM

The main determinant of Nepal's commerce—its history, pattern, composition and volume—has been geography. Ridges stretching southward from Himalayan highlands to the lowlands of the Terai have interposed lofty deterrants to east-west trade within the country, an effect reinforced by unbridged rivers flowing southward into India. Rugged terrain throughout the greater part of the country has been a severe obstacle to even north-south commerce, internal and external. But the trade channels that have existed—within the country, and through a few high passes into the Tibet region of China, and across the flat 500 mile Indian frontier—are largely north to south channels.

Until recent years goods north of the Terai were carried almost exclusively by men and by pack animals along narrow and sometimes dangerous mountain trails. Products of the hill country, along with salt, wool and other items from Tibet found their way to the midland valleys and the Terai and beyond, while agricultural products from the Terai and manufactured goods from India and overseas followed the reverse route. According to popular belief Nepal enjoyed a flourishing entrepot trade. Being the immediate source for Tibet of rice, sugar, tea, amber, turquoise, coral, brocades and many other items, Nepal was called by Tibetans *Bhayul*, the "land of plenty". And through Nepal to the outer world went Tibetan rugs and blankets, hides and skins, yaktails and other products.

As a land-locked nation, Nepal's contacts with and routes to the outer world were entirely through India and the remote Tibet region of China. From an undeveloped economy, more than 95 per cent agricultural, it had few items which could compete successfully in world markets. The only trading in volume has been the passage of local products both ways across the almost indistinguishable Indian frontier.

Influences of the past century appear to have had a predominantly retarding effect upon Nepal's commerce, especially our foreign trade. From the mid-19th to the mid-20th century, isolationism was national policy. Entrepot trade in that period was conducted mainly at the borders, with Nepalese buying at one frontier goods to be carried and sold at the other. This trade received a heavy setback when easier alternative routes

into the Tibet region of China were developed through Kalimpong and Sikkim, and was further reduced on both sides of the northern boundary by obstructive tariffs and lawless interference by local elements of the then Tibetan Government.

To the south, the construction of a short narrow-gauge railway into Nepalese territory, from Raxaul to Amlekganj, linked with a road which in turn connected with a ropeway and a trail to Kathmandu made a break in the capital's physical isolation. The Government meanwhile, has abandoned the previous policy of isolation. These developments might have presaged a rapid upsurge in trade with India and, through India, with overseas countries. They did make for a considerable increase in the imports of Kathmandu valley. The recent inauguration of air transport, serviced by the Indian Airlines Corporation, which links Kathmandu with India, on the one hand, and with a few interior centres on the other, has facilitated a dispersal of imports from India and beyond.

But against these influences must be set others that have combined to hold in check a healthy expansion of Nepal's internal and external trade. Transport and communications within the country are still severely limited. There is a shortage of information on potential trade channels and a dearth of statistics that might reveal past and present trends, as well as a continuing lack of more than a few commodities suitable for export. We have not had public and private commercial and banking institutions well adapted to the promotion and support of trade. During the past several years financial instability has reduced willingness to initiate or expand trade ventures. And foreign trade relations—with India, China, and many other nations with whom Nepal has diplomatic relations—have not had the desirable foundation of a series of well-drawn treaties of commerce and friendship.

Such a treaty with China, together with an improvement in transport facilities to the Tibetan border, would be a means to the restoration of our entrepot trade which could be an important aspect of our future commerce. But the most urgently needed negotiations is for a revision of our present treaty with India which affects both the bulk of our foreign trade, which is with India, and potentially significant overseas trade which must pass through India.

The current treaty is now out-dated in its provisions relating to import and export tariffs, customs administration, the movements of goods in transit, and the administration of foreign exchange earnings. Formal agreement upon mutually acceptable terms governing the above and related matters could provide an important milestone in the growth of healthy commercial relations

with India and with many overseas countries including Burma, Pakistan, Ceylon, Japan, European nations, the United Kingdom and the United States. It would also pave the way for well-constructed commercial treaties with these and other overseas countries.

Other measures are no less important and will be pressed during the early part of the Plan period in order that our commerce may benefit by, and contribute to, other aspects of our national development. Some are general measures, of primary concern to parts of the Government other than the Commerce Department but nevertheless of crucial importance to the growth of trade. These measures include the improvement and extension of transportation facilities within the country and to our borders; the expansion of production from our farms, forests and industries; the stabilization of our currency and progress toward improved foreign exchange relationships; and the development of modernized institutions; public and private, needed in the evolution of our structural trade relations. We need co-operatives, trade associations and other institutions through which marketing practices can be improved and its channels widened. We need trade promotion through publications and fairs and emporiums. Extended banking and credit and insurance facilities could do much to grease the wheel of commerce and add to its stability.

One of the principal functions of our expanding commerce is to build up the country's capacity to earn foreign exchange. For producers' goods—the implements and machinery of modern technological progress must usually be purchased largely from abroad. A country poor in foreign exchange resources may, at the present time, be able to make good the shortage by effective use of aid proffered by friendly nations. But such aid is not likely to continue, in volume, over a long period of time. It is important to build up some foreign exchange resources, and especially to expand the nation's capacity to earn foreign exchange, so that the country may stand more strongly on its own feet when outside assistance begins to taper off.

There are two principal means whereby Nepal can develop its capacity to earn foreign exchange. One is to develop and expand the country's export industries. The Department of Commerce will co-operate with the Departments of Industry, Agriculture and Forestry and with private business in analysing the potentialities of external markets for our products, in providing guidance thereby to industries producing for export, and in developing contacts and channels needful in expanding the scope and volume of our export trade.

The other principal means open to us for the acquisition of foreign exchange is tourism. This is a field in which several departments of the Government will need to co-operate with each other and with non-governmental enterprises like travel bureaus, hotels, and guide services. For in order to build up tourism in Nepal it is necessary to disseminate widely in other lands information about the interests and attractions of the country, to build up travel facilities and modern hotel accommodations, to give information and provide guide services when desired, to make available the most appropriate products of Nepalese arts and crafts, to renovate points of major historic and cultural interest and, perhaps most of all, to ensure full and satisfying opportunity to see, enjoy, and perhaps visit Nepal's matchless asset, the incomparable Himalayas with their flora, fauna, spas, lakes and waterfalls.

In carrying out its role, the Department of Commerce will have to strengthen its own organization and staff, adding, as rapidly as possible, experts in the main fields of domestic and foreign trade. It will co-operate closely with the Finance Ministry on matters relating to tariff schedules, customs administration and trade statistics, with the Departments of Agriculture, Industry, Forestry and Mining on questions of relationship between production and trade ; with the Ministry of Planning and Development on question of over all policy ; with the State Bank on foreign exchange and related issues ; and with all types of private organizations seeking in useful ways to foster the healthy growth of trade. Consideration is being given to the establishment of an Import and Export Advisory Board including in its membership respected and prominent businessmen as well as Government Officials, to assist in the formulation of wise policy decision for both the immediate and the longer range future. Study will also be given to the question of establishing a State Trading Corporation. And steps will be taken, during the first year of the Plan period to evolve a suitable programme for commercial education at all requisite levels, beginning with courses in book-keeping, statistics and the like. Until our educational facilities in this field can be built up, selected advanced students will be sent abroad for training in the fields of our greatest need. By these and other means effort will be made to enable commerce to play its important part in broadening the country's economic base and in raising the standard of living of all segments of the population.

CHAPTER 17

RAPTI VALLEY MULTI-PURPOSE PROJECT

Rapti Valley, some 90 miles south-west of Kathmandu, is 600 square miles in area. It has approximately 25,000 inhabitants and 25,000 bighas (nearly 42,000 acres) of land under cultivation. The valley contains, in addition, about 50,000 additional bighas of fertile wasteland which can be brought under cultivation without damaging forest resources. The soil is suitable for growing cereals, pulses, sugarcane, oil-seeds, fruits and vegetables. Grassland is also available for cattle breeding. The surrounding forest, large and dense, abounds in high class timber resources for wood-working and derivative industries such as the manufacture of furniture, matches, paper, tanning materials and bamboo products. Ample raw materials also exist for other small or medium-size industries such as oil-milling, rice-milling, cigarette production and lime and cement manufacture.

Repeated attempts in the past to cultivate the valley's rich waste-land were thwarted by the deadly form of malaria which it is now possible, by modern methods, to control or eradicate. The conquest of malaria is the first major step toward the valley's development. The second is the building of roads and bridges. Concurrently, studies and surveys are needed to establish the potentialities of the area and its primary needs.

Because of the possibilities of the area, especially for the production of food and the settlement and rehabilitation of poor and landless farmers, the Rapti Valley Multi-Purpose Development Project was recently initiated with the co-operation and assistance of the United States aid mission in Nepal. The primary objectives of the Project are to produce enough food to satisfy local requirements and provide in addition a surplus for food deficit areas in hill districts and Kathmandu Valley and, second to accommodate and give employment to poverty-stricken farm workers including flood refugees. Other aims, hardly less important, are to reduce the population in over-crowded areas, to foster a range of local industries, to serve as a precedent and training ground for other comparable projects, and to demonstrate the Government's determination to help the people in solving their most pressing economic problems. The Project will also help to preserve various forms of wild life. And, in time, it should bring to the Government revenues which can be applied to further development in the country.

Development of the area has already begun with preliminary surveys and the initiation of malaria control work, road building and other activities. Plans have been drawn for a wide variety of developmental activities—such as construction of a 50 mile road from Hitaura to Narayangarh, spraying of 400 villages against malaria, settlement of 25,000 people, breaking and putting into cultivation 50,000 bighas of land, establishing co-operative societies, schools and health services, setting up a variety of local industries, co-operating with the Village Development administration in building up local activities and extension services, building an air strip, and carrying out a cadastral survey.

Steps are being taken to integrate the activities of National Government Departments in relation to this first multi-purpose field project undertaken in Nepal. This kind of integration is a new feature in our administration. The interested departments—especially Transport and Communications, Health, Irrigation, Industry, Agriculture, Forestry, Education, and Finance as well as Planning and Development are to take active part in the Project. Each will set up its own annual working schedule in consultation with the Administrator of the Project. Coordination will rest with the Administrator who is responsible to the Rapti Valley Development Board. Policies and regulations for the Project will be formulated by the Board. The orientation of the Project will be mainly in relation to the needs and potentialities of the villages. *Panchayats* or village councils will be organized and the development work accomplished will in large part be the product of the efforts of the local people.

CHAPTER 18

RESETTLEMENT AND GOVERNMENT HOUSING

Within the agricultural population of Nepal, totalling about 8 million, the number of land-hungry farmers has been increasing in recent decades. The primary reason is population growth; the currently estimated rate of increase of the rural population is more than a lakh (100,000) every year. As a result, the better agricultural land has become over-crowded, and more and more farmers have been moving into marginal lands, frequently on steeper or higher slopes in the hills where watering is more difficult and where limited soil nutrients may be quickly exhausted and are difficult to replace. Searching, then, for new lands, farmers in many hill districts have been resorting increasingly to a shifting agriculture.

The result is a vicious circle. As grass and forest cover are removed to make way for agricultural plots, erosion increases rapidly, especially on the steeper inclines, carrying away valuable top soil. The resultant deterioration in cultivable land leads to further shifting in search of arable plots. The denuded hill-sides, meanwhile, lose much of their moisture retaining capacity, in consequence of which landslides and floods of mounting severity occur, frequently destroying crops and increasing the hazards of farming in areas many miles away from where the shifting agriculture takes place.

There are two principal methods of attacking this grave problem. One is through conservancy measures, discussed elsewhere in this volume. The other is through resettlement of land-hungry farmers and their families. The latter is not only essential as a human measure. It is also a means towards checking the tragic destruction of our most precious natural resource: good farmland. Furthermore, unless there is some easing of population pressure in the hill districts, there is little prospect of bringing under control the floods which carry woe and destruction to so many each year in the flat lowlands of the Terai.

The acreages which can best be made available for the resettlement of land-hungry farmers, especially from the hill districts but also from the Terai, are sections of relatively level and relatively uneconomic forest land which can be cleared and transformed into suitable farming areas. A major undertaking of this type is already under way in connection with the Rapti Valley

Multi-Purpose Project, discussed in the previous chapter. Other Projects, still at the planning stage, are in Tokhu Birtta in Jhapa, in Kosi Tappu, Kamala Khonch, Tin Patan, Chitwan, Kumari Ko-jhari, Sunwar Tappu, and Kailali.

Each project will have two main phases. The first is preparatory and consists of land surveying, soil testing, mapping of the area, plotting and demarcation, clearance, road construction, and irrigation if necessary, followed by initial arrangements for sanitation, health protection and schools. The second phase is the actual movement of farmers and their families into the area. For most of the projects the first year and more will be required for the preparatory work, with resettlement commencing, when possible, during the second year.

Expenditures during the first phase will be mainly in the nature of direct governmental investments; in the second phase, they will consist principally of loans to the farmers, from a revolving fund, for the purchase of tools, implements, seeds and, if necessary, food-stuffs to tide the settlers over until the first crops come in. The tentative allocation of funds for resettlement work during the Plan Period is Rs. 40 lakhs.

For the carrying out of this and many other parts of the national development programme, as well as the conduct of day to-day administrative tasks, the district governments are handicapped by lack of suitable office and residential quarters. Existing structures are insufficient, with many in a state of serious disrepair. The Government proposes, as part of the Five-Year Plan, to house each district government more adequately, partly through reconditioning existing structures when warranted, but mainly through erecting new, more durable buildings. The estimated cost of this governmental housing programme, during the next five years, is Rs. 85 lakhs.

CHAPTER 19

HEALTH

Nepal with an area of 54,000 square miles and a population of 84 lakhs of people has a total of 600 hospital beds, half of which are concentrated in Kathmandu Valley, as compared to 3,000 and 25,000 beds required to equal respectively the levels of India and the West. The total facilities for medical care outside of the valley depend on 23 hospitals, 16 dispensaries using modern medicine, and a number of Ayurvedic dispensaries. There are only about 50 qualified medical officers attached to the different hospitals, and only one doctor for every 1.7 lakhs (170,000) people.

There are no health statistics available for the country, yet life expectancy is known to be low and maternal and child mortality to be high. Intestinal parasites, filaria, tuberculosis, venereal diseases and malaria are common, the last-named affecting about 30% of the two-thirds of the population living in malarious areas.

No preventive medicine was done prior to 1954, when an insect-borne disease control programme was launched. The greatest benefit to the health of the nation depends on measures of preventive medicine, the development of which should have first priority.

There is no machinery at present for collecting vital statistics, yet these are most important in the study and programming of health needs. A reorganization of Health Services to simplify administration, increase and render more efficient the staff, and to improve co-ordination with Health aid programmes of other countries is urgently needed.

The Health Department proposes through the Five-Year Plan to establish a smooth running machinery for conducting the recognized functions of Health Services. It will do its utmost to promote health for all by providing :

1. Health education to the public in simple principles of sanitation and hygiene.
2. Maternal and infant care.
3. Prevention of diseases through malarial control measures, compulsory vaccination, provision of safe water supplies, etc.

4. Treatment of disease through improvement of hospitals and dispensaries, and an increase in their number and distribution.

Because our resources are limited, a rehabilitation programme for those permanently injured by disease or accident must await a later date for its inauguration. A start has been made on the activities listed above, through the Joint Fund Projects of Local Health Services and Insect Borne Disease Control, as well as through schools recently started for training health assistants, nurses, and health specialists. The number of trainees must be increased. Also data and statistics must be collected during the Plan Period which will facilitate the rounding out of a complete programme for the next five year period.

Under the Five-Year Plan, work by the Local Health Services will become the responsibility of the Medical Officer through Health specialists, health assistants and female auxiliary health workers, public health nurses, and district health officers. The malarial control programme will continue under the Insect Borne Disease Control Bureau.

An additional 423 beds (42 Ayurvedic) and 51 dispensaries will be added to present facilities. The dispensaries will gradually be converted into Health Centres as the health assistants, now being trained, become available. A total of 276 nurses and 205 health assistants will be required to fulfil the plan of the programme as outlined below. These, as well as other personnel required for staffing hospitals, etc. will have to be recruited on a temporary basis from outside the country until enough can be trained locally.

An outline of the Five Year programme follows :

1. Amalgamation of Bir Male and Female Hospitals to form a 268 bed civilian hospital. This hospital will become a training centre for health assistants, nurses, and other health workers, and for the future Medical College.
2. Four 50 bed hospitals to be established in the Terai, one each year, at Biratnagar, Birganj, Nepalganj, and Bhairawa.
3. One 15 bed hospital to be established each year.
4. Building of 51 dispensaries in the five years, 34 of which will be started the first year.
5. Conversion of Lalitpur and Bhaktapur hospitals into 25 bed institutions, with increases in staffs.
6. Increase of Tokha Sanitorium to 100 bed capacity primarily for surgical cases, modernizing the present Chest Clinic in Kathmandu, and establish three additional chest clinics, one each in the Terai, the Central area, and the Hill region.

7. Control of malaria through yearly spraying of all homes in malarious area, and by distributing anti-malarial drugs to the people ; 42.5 lakhs of people will be thus protected.

8. Local Health Services, as part of the Village Development Programme, will train female health workers, collect vital statistics, use preventive medicines and measures against disease. Zonal and District Health Officers will be responsible for the treatment and prevention of disease.

9. Repair and improvement of existing hospitals and dispensaries with additional staff and equipment.

10. Health Assistants School to be housed near the reorganized Bir Hospital permanently, graduating fifty students every year.

11. Nursing school to utilize the reorganized Bir Hospital, completing the training of fifty nurses each year after the first 2 years.

12. Ayurvedic hospital to be enlarged to a 50 bed hospital, and three Ayurvedic 15 bed hospitals and 43 dispensaries to be built.

13. Homeopathic Hospital building to be built and two dispensaries for each Zone to be constructed.

14. Aid to other existing institutions, such as "Paropakar" society, the Tuberculosis Association, and "Swasthya Mandir" (Dhunkuta).

A total of 138 doctors, 276 nurses, and 205 other health workers will need to be provided in the five year period. During the period of build-up of our own medical personnel through training, help from foreign aid programmes and temporary contract services of personnel from outside the country must be depended upon.

The major benefit to be derived from the health programme is a healthy people with greatly enhanced productive power, better able to bring about their own prosperity.

Legislation will be recommended for :

1. The compulsory registration of doctors, compounders, nurses and health assistants.
2. Making smallpox vaccination compulsory.
3. Requiring declaration of notifiable diseases.
4. Enforcement of international regulations relative to health certification of persons entering or leaving the country.

CHAPTER 20

EDUCATION

Elementary and Secondary Education.

The need for universal education in Nepal is clear. A democratic government and a democratic way of life are based upon an enlightened citizenry; there can be little technological advancement without education. The improvement of economic conditions within the country is dependent upon a knowledge of technology and an expanded programme in education. Because we have become a part of the world, we can no longer remain apart from it. To gain and hold a place in the world we must have a steady growth in education.

Obstacles to growth and progress of education are numerous. Shortage of trained teaching personnel, shortage of schools and lack of a university for training our own personnel, shortage of capital, problems of reorganization within a new government, an extremely inadequate transportation and communication system, an obsolete tax and land programme and a severe lack of facilities for health are but a few of the serious problems which must be tackled and solved before progress can really manifest itself.

The objectives of education are of course numerous. A few of the long range objectives which define characteristics of the proposed education plan are not in themselves important. It is the implementation of these objectives which will produce results. Objectives as outlined in the National Education Commission Planning Report indicate the desires of the people in Nepal that education must be universal, it must be national, it must serve individual needs, and it must serve the people. In addition a plan for higher education and the education of adults must serve all those who desire growth in the many projected areas.

In the area of elementary education, plans are already functioning. Teachers are being trained at the approximate rate of 400 per year; new schools are continually being opened by these new teachers; adult education has its ground work established in that each new teacher is prepared to organize and teach adult literacy classes. There are perhaps 15,000 more children in school now than there were 18 months ago.

Secondary education will receive stress this year under established plans. At this point it must be realized that unless a statewide organization, which will bring about a uniform school

system in Nepal, is well established, education cannot spread. The evils of jealousy among the different types of schools and the lack of proper financial support could undo the progress made to date. Therefore, it is imperative that rapid progress be made in effective organization. A plan for financing the schools is based on an estimated per pupil cost per year and will assure well trained teachers at all levels of educational training. A degree teacher at the primary level must be considered a necessity if children are to receive a proper start in education. Just permitting anyone willing to teach to be a teacher in the elementary schools will defeat the total programme.

The general outline of the Five Year Plan as approved by His Majesty the King has been followed. The estimated cost of the education programme was first calculated on a basis of Rs. 31 per pupil cost per year at the primary level, Rs. 34 and Rs. 44.02 at the middle and high school levels respectively. The breakdown of the per pupil cost per year is made in terms of the school staff (90%), supplies and services (7%) and administration (3%).

The successful operation of any plan depends mostly upon the availability of the needed technical personnel. This programme requires 1890 primary teachers, 504 middle school teachers and 100 high school teachers for the Plan period, for 630 primary, 126 middle and 10 high schools. The National Teachers Training Centre, plus the proposed School of Education and the Sub-teacher training centres can train approximately 600 teachers per year. It is, therefore, felt that the required personnel can be trained for the overall programme.

A Comprehensive University for Nepal :

If the elementary, middle and high schools are to be up-graded and expanded it will require an expanded teacher training programme at the sub-collegiate and collegiate level. The Education Planning Commission Report, therefore, emphasised the need for a university programme for Nepal, not only to train teachers but also to train leadership for agriculture, engineering projects, health and sanitation, in fact for every phase of the economic and cultural development of Nepal.

Nepal now has the nucleus of a university in the following separately located and separately administered higher educational units :

1. Tri-Chandra College (Arts and Science)
2. Women's College (Arts)
3. Nepal National College (Night School)
4. Law School (Professional)
5. National Teacher Training Centre (Professional)

The National Education Planning Commission emphasised the importance of bringing these institutions together in a co-ordinated programme of higher education in order to enhance the quality to these institutions and to achieve economy in the utilization of personel and equipment.

In its conception of a University for Nepal, the Commission envisaged a comprehensive university embracing not only an Arts and Science College, but the gradual development of the needed professional schools on the same campus. To carry out the Commission's recommendation the following steps are under consideration :

1. Appointment of a permanent control body through the promulgation of a University Act containing the charter of University. A temporary University Commission has been appointed by His Majesty the King. This Commission is now in the process of selecting a site and is considering a proposed Charter for the University.

2. Training a small nucleus of administrative officers to administer existing institutions under the control body by bringing them together in a unified University Organization. Scholarships are available for the training abroad of University administrative officers. Practically no added internal cost is involved in these first two steps.

3. The third step is to organize immediately a professional School of Education with the existing National Teacher Training Centre as a nucleus, expanding it into a four year School of Education for the training of elementary and secondary school teachers. A faculty of eight Nepali teachers trained in the U.S. is now available and 10 additional future staff members have been selected for a year's training in the U.S.

4. The next under consideration in the development of a comprehensive University is the upgrading to a professional level of the School of Agriculture referred to in the following chapter, and the addition thereto of a department of Home Science, and ultimately a department of Forestry. Such a professional School of Agriculture should gradually incorporate an agricultural experiment station with suitable branch stations and the necessary research and service laboratories for soil and seed testing, animal diagnostic services, etc.

5. A further step under current study is the advancement to university level of the School of Engineering discussed in the following chapter on training. Such a school might well continue to offer short courses for technicians and supervisors needed by Nepal in its developmental programme. The school will provide a degree-granting curriculum, with a common base for two years and in the last two years, specialization in mechanical,

electrical, civil, and industrial engineering and in mining. In this school, necessary non-duplicating laboratories would serve and help to intergrate the work of materials testing laboratories, metallurgical laboratories, hydraulic laboratories and the like.

6. Ultimately the University should embrace a Medical School including nursing education and finally dentistry.

While immediate steps can be taken to bring together the existing colleges and the organization of added professional schools such as education and agriculture, the development of the Engineering School and Medical School will require several years in order to provide the necessary facilities and trained faculty members. The Government is now spending approximately 4½ lakhs of rupees annually to operate existing colleges. For an additional Rs. 3 lakhs annually, the University Programme could be started including the five units listed above plus a professional School of Education and a professional School of Agriculture. Provision could be made, concurrently, for the training abroad of faculty members in engineering, and for the inauguration of a pre-medical course within the University. It is estimated that for an additional expenditure of approximately 12 lakhs of rupees for the Five-Year Plan period a significant beginning toward a comprehensive University Programme could be inaugurated.

Universities are not built in a day or a year. The National Education Planning commission charted a sound course of development for a University Programme for Nepal, to provide the necessary cultural and professional education at home for the young men and women of the country, and adapted to the leadership requirement of the nation. A University Commission is now at work planning the gradual development of a University along the lines mentioned above. Friendly Governments and public spirited citizens of Nepal are pledging support for this significant movement which is so important to the realization of the first Five-Year Plan and to the long time future of the Nation.

CHAPTER 21

TRAINING

It has been said that a country cannot advance more rapidly than its people. As repeatedly stressed in earlier chapters, the most crucial problem confronting us in our attempt to achieve, within a few years, significant gains in economic and social development, is the lack of trained personnel—technical and administrative. Unless this problem is met with determination and vigor, there can be no possibility of success in attaining the goals of the Five-Year Plan. Training, more than any other single factor, will determine the rate at which plans can be translated into action. It is estimated that an average of at least 5 per cent of each departmental budget, over the five year period, will be spent for training, and that the percentage during the first two years will be much higher. Thus total expenditures for training will not be less than Rs. 1.66 crores (16.6 million) and the outlay required during the first year may be in the vicinity of Rs. 80 lakhs (8 million).

Each participating department has made a preliminary assessment of its trained manpower requirements, in all categories, for the execution of the Five Year Plan. The results, after making deductions for personnel now available, are summarized below. Lower grade technicians may be defined as those who have received either diplomas in technical training or other limited specialized training, while upper grade personnel, technical and administrative, may be defined as those who, for the most part, have received degrees in their respective fields. The figures shown should be regarded as tentative and subject to considerable alteration in the light of further surveys and experience.

REQUIREMENTS IN NEWLY TRAINED PERSONNEL

<i>Field</i>	<i>Lower Grade</i>	<i>Upper Grade</i>
Village Development	912	103
Agriculture	433	108
Cadastral Survey	600	35
Cooperative Societies	48	3
Land Reform	64	—
Irrigation	48	17

Forestry			345	7
Transportation :			114	42
A. Roads	64	22		
B. Railways	35	15		
C. Airways	12	5		
D. Ropeways	3	—		
Communications :			231	14
A.. Telephone	133	3		
B Wireless	98	11		
Power			50	20
Industry			375	100
Minerals and Mining			50	59
Commerce			15	15
Tourism			20	10
Rapti Valley Project			48	15
Resettlement			18	9
Government Housing			32	4
Health			481	138
Education			5130	500
Survey, Research, Statistics & Publi-				
city				
Survey	24	12		
Research	—	69		
Statistics	45	10		
Publicity	—	3	69	94
TOTAL			9083	1293

With some exceptions, it may be said that present planning calls for the training of lower grade technicians within Nepal, while the upper grade technicians and administrators will receive their requisite training abroad principally through special scholarships or fellowships made available under the Colombo Plan or through other channels or bilateral or multilateral aid.

Three village worker training schools already started in Kathmandu, Parwanipur and Nepalgunj will have to be expanded considerably to meet the early requirements of the Village Development Programme. Agricultural technicians will receive their training in a new School of Agriculture in Kathmandu for which plans have been laid and which is expected to be inaugurated before the end of 1956; this School will eventually become a part of the new National University. Cadastral survey workers will be instructed in specialized *ad hoc* training centres. After the upper grade personnel for the promotion of co-operative societies have received their training abroad, they in turn will provide within Nepal the training required for the junior grade workers in this field. It is expected that the same general

pattern will be followed in the training of the legal and administrative personnel required for the detailed formulation and, after enactment, the implementation of the Land Reform Programme.

Two types of training will be conducted within the country for lower grade technicians needed for the implementation of programmes requiring engineering skills, namely: irrigation, forestry, transportation, communications, power, industry, and minerals and mining. The first type of training will be through an Engineering School in Kathmandu, designed at first to train junior grade technicians but intended to be linked eventually with the new National University, or through other specialized courses for specific projects. The second will be in-service training for which junior-grade personnel will be attached, with appropriate teaching and working supervision, to field units engaged in carrying out development projects.

A Government-sponsored Engineering School for junior-level technicians, started but suspended due to administrative and technical difficulties, is to be put on a sound footing and rapidly expanded. This will require an enlarged plant, substantial additions in equipment and supplies, adequate financing and the assembling of requisite teaching staff. It is expected, under arrangements now being negotiated, that in the initial stage the faculty for the Engineering School will be provided principally from abroad, pending the training of our own teachers at a sufficiently high technical level.

While the purpose of the school, at the outset, will be principally to provide as promptly as possible technical personnel urgently required for implementation of the Five-Year Plan, for whom jobs in government service will be reasonably assured, its doors will also be open to students expecting to enter private industry as machine workers and repair men, electricians, metal workers, wood workers, laboratory assistants and similar occupations.

A preliminary curriculum covering both basic and applied subjects has been drawn up in detail and will be adjusted in relation to the emergent needs of the national development programme. It is expected that the school will be under the direction of a technical education board, and that expert counsel in its development will be provided from both multilateral and bilateral aid sources. In view of the shortage of technical teaching staff, officers in the Government who have received training in engineering subjects, and professors of science and mathematics in Tri-Chandra College, will be invited to undertake limited teaching loads. This and other temporary arrangements will be designed to expedite the opening of the school at the earliest feasible date.

In the field of health, two training courses have been initiated with United Nations assistance. One is for "medical assistants" who, upon completion of their course, will be qualified for preventive public health work and for the treatment of common, readily identifiable ailments. The other course is for nurses, now in exceedingly short supply in Nepal. These courses are to be repeated with increasing numbers of students, and an existing school for compounders, or pharmacological technicians, will be improved. Preliminary plans are being laid for the establishment, later, of a medical school as part of the new National University.

In support of the education programme, two teacher training schools, already started, will be strengthened. One is for teachers in primary schools, the other for high school teachers. It is expected that these two centres will be able to keep pace with the rapid expansion of Nepal's general educational system, as projected under the Five-Year Plan.

All of the above training programmes will be accorded exceptionally high priority in order that skilled manpower at all requisite levels may become available for the carrying out of our national programme of development.

CHAPTER 22

SURVEYS, RESEARCH, STATISTICS & PUBLICITY

Emphasis has been laid, in previous chapters, upon the lack of basic information on the resources, current condition and potentialities for growth of the Nepalese economy, as well as special types of data needed for the detailed planning and execution of the various development programmes envisaged. While the first stages of constructive work must in many cases be carried forward as well as possible on the basis of existing knowledge, without waiting for the results of scientific surveys, it is important that the more serious gaps in our information be filled as rapidly as practicable. For this reason stress has been placed, in section after section of the Draft Five-Year Plan, upon the urgent need for many types of survey work. During the first two years, and especially the first year, high priority will be given to the surveys considered most essential to the effective planning and conduct of each facet of the national development programme.

Mention has been made of plans, during the coming months, to conduct, with expert help, studies of the extent and quality of our resources—human and material, the present level of our national production and income, the fundamental features and current functioning of our economic institutions as well as the institutional evolution now needed in order to promote more effectively our own economic growth, and the ways in which both internal and aid resources may be employed most effectively in the interest of healthy economic advancement for the entire nation. Reference has also been made to more detailed surveys specifically related to development activities being planned in nearly all parts of the agricultural programme, and to projected work in the fields of forestry, irrigation, power, road building, ropeway construction, communications, industry, mining and resettlement. Some of this survey activity can be carried well forward within a year or two; some, like the cadastral survey, will require years to complete. Once started, many types of surveys will become continuous activity, enabling both Government and private interests to keep currently well informed on progress and prospects in various aspects of the economy and in our economic life as a whole.

In some instances survey work of a more specialized character will be conducted entirely by the department concerned with

such cooperation as may be rendered by educational institutions and local administrative organs. In other cases coordinated survey planning and execution is highly desirable in order to achieve maximum results with a minimum of needless duplication and waste. This applies with particular force to engineering surveys needed in the planning of roads, ropeways, communication lines and, when overlapping areas are involved, power, irrigation and flood control projects. Such coordination is now being planned with the participation of the departments concerned.

Of equal importance is the work that needs to be done in many fields of research. It is not necessary to duplicate the vast amount of fundamental research that has been done in other countries ; we can borrow freely from the storehouses of basic and applied scientific knowledge. But there are types of information, necessary to the effective development of our economy, which can only be gained in Nepal, through research conducted here. As indicated in earlier chapters, research and experimentation are needed to determine the types of crops best suited to climatic and soil conditions in various parts of the country; to analyse the soils of areas under consideration for reclamation and resettlement; to determine the quality and extent of forest resources; to make laboratory tests of rocks and minerals and fibres and many other types of raw materials ; to discover through meteorological, hydrographic and other studies information essential to the planning of hydroelectric, irrigation and flood control projects; and to ascertain basic needs in health, education and many other fields. Research, in fact, is a continuous and unending process vital to economic growth, and its possible scope is unlimited.

The auspices under which research activities will be conducted will vary according to the subject matter and its relationship to various aspects of economic development. Certain studies of a specialized and immediately applicable character will be conducted by the Governmental departments concerned. Research of a more general or basic nature will emerge as part of the University programme now being planned. Consideration is also being given to the establishment of a central Scientific Research and Development Institute to serve all agencies of the Government requiring assistance in coping with scientific problems. Into such an Institute would be merged under unified, competent direction certain limited existing laboratories and physical research activities now receiving governmental support. Functioning within the Ministry of Planning and Development, or as an applied science department of the new National University, or as an independent agency of the Government, the Institute, as now con-

ceived, will have an Advisory Board on which will be represented all of the technical agencies of the Government with direct interest in its work. Its activities would be related primarily to problems connected with some phase of economic development. When feasible, its services would be extended to private industry as well as government agencies. Among the objectives of the Institute would be : systematic studies of natural resources; analysis and testing of commercially important raw materials and other natural products; marketing studies; determinations of standards of quality for both raw materials and manufactured products; devising of means for more effective commercial exploitation of natural resources available in Nepal; serving as a source, upon request, of all kinds of available scientific information; and carrying out other similar functions related to any aspect of development.

From surveys and research will come an expansion in the kinds of statistical data that have become so important in modern times to both governments and private enterprise. A beginning has been made with the population census, and through it valuable experience and training have been acquired. It is now essential that the scope of statistical work be steadily broadened. It is proposed to establish a Central Statistical Office, with branch offices in appropriate localities, to conduct needed studies, in cooperation whenever possible with other governmental departments concerned; and to serve as a central repository of all kinds of statistical data derived from its own studies and those of other governmental or private agencies. Although the priorities are not yet finally established, it is expected that the enlarged scope of governmental statistical work will expand progressively to cover : vital statistics, health statistics; price movements; import and export statistics; meteorological records; and other types of quantitative data emerging from studies and surveys conducted by the Departments of Village Development, Agriculture, Industry, Mining, Transportation, Communications, Irrigation, Commerce, Finance, Education and Health.

From the Statistical Department and from all other agencies of the Government actively engaged in carrying forward programmes and projects under the Five Year Plan will come a steady flow of information on the problems encountered and the progress achieved. It is of the greatest importance that such information be shared fully and promptly with the people of the nation whose full understanding and participation are essential to the success of the Plan. Arrangements will be made to use all available channels of general communication, especially press and radio, but also special publications, exhibits, lectures and cinema to make sure that the Plan will be viewed, not as the activity of an aloof Government, but as a joint enterprise of and for the people.